WDO
ONTARIO
WASTE DIVERSION
ORGANIZATION

Programs Committee: Curbside Recycling Optimization Task Group

Interim Five-Year Plan

To Increase Diversion Of Residential Recyclable Materials To Contribute To The Provincial 50% Diversion Objective

16 August 2000

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1.0 Introduction/Purpose of Optimization Strategy

The Optimization Task Group of the Waste Diversion Organization (WDO) Program Committee has been tasked with developing a strategy for the diversion of recyclable materials from the residential sector in Ontario that will contribute to the provincial goal of 50% waste diversion from landfill. To that end, three scenarios for the continued evolution of the recycling system in the province have been developed. The purpose of these scenarios is to examine the potential contributions of residential recycling against the target of diverting 1,000,000 tonnes/year from landfill in the province over the next 5 years. (Note – it is anticipated that the majority of this target would need to be achieved through the diversion of organics from the residential sector).

Three scenarios have been developed to estimate a range of possible tonnages in future residential recycling programs over the next 5 years.

- Scenario One – a "Current Momentum" scenario - projects Year 2005 recycling recovery at 787,000 tonnes based on current momentum. Under this scenario, a limited number of communities implement aggressive recycling programs while one-half of the multi-family units in the Toronto area are projected to achieve high recovery rates through mixed waste processing systems. This scenario represents modest growth of 20,000 tonnes each year to the year 2005 (from a baseline of 667,000 tonnes in 1999).

- Scenario Two - a "50% Diversion" scenario, in which annual residential recycling increases to 1.0 million tonnes in 2005. Extensive waste regulations (e.g. wide-spread implementation of municipal user pay programs and landfill bans) as well as significant changes to the waste management infrastructure - particularly for multi-family units - underpin the high household recovery rate forecasts in this scenario.

- Scenario Three – a "Middle Ground" scenario - assumes reasonably aggressive growth in annual recycling tonnage resulting in 880,000 tonnes collected in 2005. An intensive municipal approach to waste management resulting in increased average recovery rates with greater success in multi-family programs in the GTA are the key assumptions of this scenario.

The projected cost implications, the comparative impacts of newly recovered materials on the markets for key materials recovered as well as the technology and regulatory requirements of each of the scenarios are examined in this strategic plan.

2.0 Residential Recyclables Generation

2.1 Ontario Population and Household Break-down

In 1999, the population of Ontario was reported to be 11,513,000.[1] As shown in Table 2-1, there were approximately 4.23 million households in the province (1999 estimate). Of this total, approximately 71%, or 3.01 million, were single-family (SF) dwellings. The remaining 29% were multi-family (MF) units (e.g. apartment buildings and possibly townhouse complexes), estimated to be 1.22 million units.

Table 2-1 shows SF and MF household estimates for nine regions in the province for communities with a population greater than 5,000. The table also shows the number of households in small communities (defined as towns with a population less than 5,000) and two isolated areas (Northwest and Northeast Ontario). Based on these definitions, 80% of 1999 Ontario households were located in 'urban' communities (i.e. in a municipality with a population greater than 5,000 or in southern Ontario).

Table 2-1
Ontario Household Estimates for 1999

Region	Total HH	SF HH	MF HH
GTA	1,550,453	852,700	697,800
Hamilton - Niagara	465,355	372,300	93,100
Ottawa	418,406	355,600	62,800
Windsor - Sarnia	215,385	193,800	21,600
London	222,904	178,300	44,600
Muskoka - Kawarthas	137,496	137,500	-
NE Ontario	148,390	133,600	14,800
Kingston-Pembroke	140,722	126,600	14,100
Kitchener - Waterloo - Barrie	140,722	112,600	28,100
Stratford - Bruce Peninsula	86,141	77,500	8,600
NW Ontario	60,293	54,300	6,000
Small communities	651,700	418,200	233,500
Total	4,237,967	3,013,000	1,225,000
Exclude North and Small	**3,377,584**	**2,406,900**	**970,700**

Household projections for 2000 to 2005 are shown in Table 2-2. These projections are based on a planning estimate of 1% growth per annum for both SF and MF dwellings in the province. Based on this assumption, the provincial housing stock is projected to grow by 260,000 units in 2005.

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[1] Population and household estimates were developed using data from a directory published by the Association of Ontario Municipalities and Statistics Canada. A number of challenges were encountered in the preparation of these data, including the impact of amalgamation on municipal boundaries and the definition of communities under 5,000, Statistics Canada census data revisions and discrepancies between different sources.

Table 2-2
Housing Stock Projections 1999-2005

Year	SF HH	MF HH	Total
1999	3,013,000	1,225,000	4,238,000
2000	3,043,100	1,237,300	4,280,400
2001	3,073,500	1,249,700	4,323,200
2002	3,104,200	1,262,200	4,366,400
2003	3,135,200	1,274,800	4,410,000
2004	3,166,600	1,287,500	4,454,100
2005	3,198,300	1,300,400	4,498,700

2.2 Estimated Residential Recyclables Generation

In order to estimate generation rates for specific residential recyclable materials (by housing type as well), the total household stock was segregated into two groups: households with access to recycling in the province and households without recycling access. Best estimates available[2] indicate that 97% of SF households (2.922 million dwellings) had access to recycling in Ontario in 1999.[3] Sixty percent of MF households were recorded as having regular access to recycling (732,900 units).[4] Based on previous CSR research, the assumption was made that 90% of households with access to recycling regularly participate in using this service.

Table 2-3
Summary of Access to Recycling and Participation Estimates for 1999

HH Factors	SF HHs	MF HHs
1999 total HHs	3,013,000	1,225,000
Access Rate	97%	60%
HHs w/Access	2,922,600	732,900
Participation Rate	90%	90%
Participating HHs	2,630,300	660,000

Working from a sample of residential waste composition studies, a profile of provincial waste generation can be developed. Recycling data obtained from CSR and MOE sources were used to calculate recovery rates and capture rates on a household basis. With these figures, it is possible to estimate the amount of material recovered for recycling (or composting) and tonnages available for future recovery (i.e. through existing service provision and through future expanded services).

The results of this generation analysis are presented in Tables 2-4. Some highlights from these tables are worth noting:

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[2] Housing estimates based on CSR data.

[3] 97% is an estimate developed for 1998 and was assumed for 1999 housing data.

[4] The estimate of MF units served is based on data from the RCO. Total number of MF dwellings in the province is based on CSR data.

- Fibres represent the largest percentage of all recyclable materials generated. Fibres include newspapers, old corrugated containers (OCC) and other paper (e.g. boxboard and mixed fine papers). The generation of recyclable fibre material in 1999 was estimated to be approximately 955,000 tonnes, representing 67% of all recyclables generated in Ontario residential waste.
- The two next largest categories of residential recyclables generated by Ontario households are glass containers (about 184,900 tonnes in 1999) and plastics (180,000 tonnes of material of which 130,800 tonnes are "mixed" plastics).
- MF households generate about 23% of materials available for recycling from the residential sector (over 325,600 tonnes of materials).

Table 2-4
Ontario Residential Waste Generation – 1999

Material	**Generation Rates**		SF HHs	MF HHs	Total HHs
			3,013,000	1,225,000	4,238,000
	SF	MF	**Waste Generation (tonnes/year)**		
	kg/hh/yr	kg/hh/yr	1.10	0.635	
ONP	129.69	67.46	390,800	82,600	473,400
OCC	25.10	23.51	75,600	28,800	104,400
Other paper	94.15	76.10	283,700	93,200	376,900
Polycoat gable	2.16	2.35	6,500	2,900	9,400
Polycoat asceptic	0.65	0.64	2,000	800	2,800
Glass food	16.03	10.33	48,300	12,700	61,000
Glass beverage	33.11	19.68	99,800	24,100	123,900
Ferrous food	13.07	10.38	39,400	12,700	52,100
Ferrous beverage	3.14	1.06	9,500	1,300	10,800
Aluminum beverage	5.98	4.60	18,000	5,600	23,600
Aluminum other	1.66	2.00	5,000	2,500	7,500
PET	4.73	6.08	14,300	7,400	21,700
HDPE	6.93	5.35	20,900	6,600	27,500
Other plastic	28.66	36.26	86,400	44,400	130,800
Food	268.40	223.52	808,700	273,800	1,082,500
Yard waste	171.60	6.35	517,000	7,800	524,800
Other materials	294.94	139.33	888,700	170,700	1,059,400
Total	1100.0	635.0	3,314,600	777,900	4,092,500
Recyclables	365.1	265.8	1,100,200	325,600	1,425,800
Organics	440.0	229.9	1,325,700	281,600	1,607,300

2.3 Future Household and Waste Generation Estimates for Ontario in 2005

The projected amount of recyclable material generated by households in 2005 is based on several assumptions, as described below:

- The SF and MF housing stock will increase by 1% per annum.
- Average waste generation rates assumed for 1999 will remain constant (i.e. 1.1 tonnes/year for SF dwellings and 0.635 tonnes/year for MF households).

- The composition of residential waste assumed for 1999 will remain constant.

Based on these assumptions – and no other systemic changes - the amount of recyclable material generated will increase 6%, from 1.425 million tonnes in 1999 to 1.513 million tonnes in 2005.

3.0 Residential Recyclable Recovery Analysis

3.1 The Growth of the Curbside System in Ontario

In "early" days of curbside recycling in Ontario (i.e. from the mid-80s to the early 90s), the growth in tonnes recycled from the residential sector was primarily the result of the rapid growth in the opportunity to recycle. The list of materials that could be set out for recycling was initially standard – and not very extensive - in most parts of the province. As more curbside households were added to the system, the tonnes recovered increased proportionally. In 1987, approximately 1.7 million households had a Blue Box recycling 97,000 tonnes of material (representing 2.5% of the residential waste stream).[5] By 1992, approximately 3.0 million households had access to recycling services with recovery estimated to be 476,000 tonnes.[6] In 1987, the average household recovery rate was approximately 57 kg/hh/yr and by 1992, that rate had increased to 159 kg/hh/yr.

The second phase of growth – from the early to the mid-90s - came primarily from adding new materials (e.g. mixed waste papers, different grades of plastics, tetra and polycoat containers, etc.) and, to a degree at least in some parts of the province, adding new households – e.g. services to MF households. The total number of household served increased to 3.5 million while recovery tonnage grew to 532,000 tonnes in 1995. Average per household recovery rates decreased slightly in 1996 – compared to 1992 - to 152 kg/hh/yr, a reflection of the relatively poor level of success achieved in MF buildings that were added to the system.

The most recent phase of growth in the tonnes of materials diverted (i.e. mid-90s to the present) has come primarily from improving the performance of existing programs and from innovative high diversion programs. Recycling growth has been achieved through enhanced education and communication efforts and non-technical system changes (e.g. increased recovery through bag limits and user pay systems). Many of the "high performing" programs in the province are recovering over 200 kg/hh/yr with some as high as 270 kg/hh/yr (see Table 3-2 for details). New technical innovations, such as wet/dry systems and co-collection programs, to date have not resulted in widespread increases in diversion but hold the promise of increased recovery through greater refinement and operational experience.

Data for 1999 indicate that the average recovery rate for all households in Ontario is 182 kg/hh/yr. This is a blended average consisting of SF and MF households. The average SF recovery rate is 208 kg/hh/yr and 78 kg/hh/yr for MF dwellings.

The key question to be considered through this plan is where will the future growth in tonnages from the "dry stream" come from in Ontario over the next 5 years.

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[5] The Physical and Economic Dimensions of Municipal Solid waste Management in Ontario, MOE, November 1991, p.3-31 and 3-38.

[6] MOE Municipal 3Rs Factsheet, 1998.

3.2 Participation, Recovery and Capture

Analyzing the current (and potential growth of) residential recycling system in Ontario requires an understanding of four key concepts: recovery rate, capture rate, diversion rate and participation rate. Once a system is examined from these perspectives, potential sources of new material to be recovered can be identified both in the short and medium terms.

Recovery rate: the amount of material collected for recycling. This rate is typically measured as kilograms per household per year (kg/hh/yr) or kilograms per capita per year (kg/cap/yr). A recovery rate can be used to measure the amount of a single material collected (e.g. the average recovery rate for ONP in Ontario is 117 kg/hh/yr) or for all materials (e.g. the average curbside recovery rate in Ontario is 208 kg/hh/yr). In contrast, **diversion rates** estimate the amount of waste diverted as a percentage of generation.

Capture rate: always expressed as a percentage, this term describes the percent of material collected for recycling compared to total generation. For example, the average recovery rate of aluminum cans by Ontario curbside programs is 4.87 kg/hh/yr and the average generation rate is 5.98 kg/hh/yr. After taking participation into account, the average capture rate is 71%. This measure is useful because it can be used to estimate the amount of material left in the waste stream and therefore potentially available for collection in a recycling program.

Participation rate: always expressed as a percent, this term describes the percent of all households that set out materials for recycling during a given period. Typically, participation rates measure the number of households that set out recyclables at least one time per month.

Table 3-1
Ontario Residential Waste Diversion and Remaining Material (1999) [7]

Material	**Diversion Rates**		**Diversion (tonnes)** with 90% participation rate			**Material Capture Rates**			**Remaining Material**		
	97% SF kg/hh/yr	60% MF kg/hh/yr	SF tonnes 90%	MF tonnes 90%	**Total tonnes**	SF %	MF %	total %	SF tonnes	MF tonnes	Total tonnes
ONP	117.21	35.64	308,300	23,500	**331,800**	79%	28%	70%	82,500	59,100	141,600
OCC	13.02	9.59	34,300	6,300	**40,600**	45%	22%	39%	41,300	22,500	63,800
Other paper	35.74	13.22	94,000	8,700	**102,700**	33%	9%	27%	189,700	84,500	274,200
Polycoat gable	0.52	0.24	1,400	200	**1,600**	22%	7%	17%	5,100	2,700	7,800
Polycoat asceptic	0.07	0.01	200	10	**210**	10%	1%	8%	1,800	790	2,590
Glass food	11.45	6.07	30,100	4,000	**34,100**	62%	31%	56%	18,200	8,700	26,900
Glass beverage	28.70	12.86	75,500	8,500	**84,000**	76%	35%	68%	24,300	15,600	39,900
Ferrous food	9.42	3.22	24,800	2,100	**26,900**	63%	17%	52%	14,600	10,600	25,200
Ferrous beverage	2.85	0.48	7,500	300	**7,800**	79%	23%	72%	2,000	1,000	3,000
Aluminum beverage	4.87	1.44	12,800	900	**13,700**	71%	16%	58%	5,200	4,700	9,900
Aluminum other	0.24	0.18	600	100	**700**	12%	4%	9%	4,400	2,400	6,800
PET	3.00	2.32	7,900	1,500	**9,400**	55%	20%	43%	6,400	5,900	12,300
HDPE	2.83	1.00	7,400	700	**8,100**	35%	11%	29%	13,500	5,900	19,400
Other plastic	1.63	0.94	4,300	600	**4,900**	5%	1%	4%	82,100	43,800	125,900
Food	24.71	-	65,000	-	**65,000**	8%	0%	6%	743,700	273,800	1,017,500
Yard waste	121.66	-	320,000	-	**320,000**	62%	0%	61%	197,000	7,800	204,800
Other materials	-	-	-	-	-	0%	0%	0%	888,700	170,700	1,059,400
Total	377.9	87.2	994,000	57,000	**1,052,000**	30.0%	7.3%	26%	2,320,500	720,490	3,040,990
Recyclables	231.5	87.2	609,000	57,000	**667,000**	55.4%	17.5%	46.8%	491,100	268,190	759,290
Organics	146.4	0.0	385,000	0	**385,000**	29.0%	0.0%	24.0%	940,700	281,600	1,222,300

blended waste generation rate (kg/hh/yr)	965
blended recycling diversion rate for all households with access (kg/hh/yr)	182
diversion rate through recycling	16%
average recovery rate for all MF HHs with access to recycling (kg/hh/yr)	208
average recovery rate for all MF HHs with access to recycling (kg/hh/yr)	78

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[7] Data in this table come from CSR and Enviros RIS files and are intended to represent 1999 activity. Diversion rates are based on current waste flow. The question of historical versus current waste flow analyses were addressed in the Interim report to the Minister.

3.3. Opportunities to Recover New Materials

There are basically three main ways in which tonnages recycled can be increased:

1) Build on the performance of existing programs

An analysis of current capture and recovery rates for existing residential recycling programs – as presented in Table 3-1 - suggests that "pockets of opportunity" exist for improving recycling tonnage diversion from existing programs.

- The estimated current recovery rate within MF households (78 kg/hh/yr) is about one-third that of SF households (208 kg/hh/yr). Because of smaller family size in MF households, the generation rate is also about 35% less; however inconvenience is also a major contributing factor to lower recovery. Improving the performance of existing MF recycling programs is a priority if increased diversion is to be achieved. Currently, MF dwellings capture about 19% of recyclables generated in those households compared to 55% by SF householders.

- Within SF households, the most notable opportunity in terms of tonnage potential is OCC and other paper. The current capture rates for these materials in the SF household sector are 45% and 33% respectively, representing over 231,000 tonnes of uncollected recyclable OCC and other paper. The estimated market value of uncollected OCC and other paper from SF sources is $22 million; an additional $10 million in potential revenue is lost from uncollected OCC and other paper generated in the MF sector.[8] By contrast, some materials – ONP in particular - have achieved a 79%+ capture rate in the SF sector and show little opportunity for future growth.

- From a municipal revenue perspective, the main opportunity is aluminum packaging. While beverage container recovery from SF households remains high (about 71%), it is estimated that over 17,000 tonnes of aluminum packaging was still discarded from all Ontario SF and MF households in 1999, representing lost potential revenue of $31 million per year.[9] Other sources of potential revenue for material with relatively low capture rates include PET ($3.5 million)[10] and HDPE ($5.9 million).[11]

2) Move towards "higher performing/higher diversion" systems

Across the province, the average recovery for all households in 1999 was estimated to be 182 kg/hh/yr, which represents a 16% diversion rate when compared against a blended average household waste generation rate of 965 kg/hh/yr. The estimate of 182 kg/hh/yr is a blended number that combines SF recovery (208 kg/hh/yr) from conventional Blue Box/ blue bag systems and MF programs (78 kg/hh/yr). Across the province, there are a number of standout programs. As shown in Table 3-2, ten of the "high performing" programs in Ontario (representing 1.5 million households, or one-third of the provincial housing stock) achieved an average recovery rate of 205 kg/hh/yr in 1999, which is approximately 15% higher that the provincial average.

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[8] Based on CSR May 2000 market price of $150/tonne FOB the municipality for OCC and $85/tonne FOB the municipality for residential mixed paper. $33 million estimate assumes 100% of fibres are marketed.

[9] Based on CSR May 2000 market price of $1,896/tonne FOB the municipality. $31 million estimate assumes 100% of the aluminum beverage containers and other aluminum waste not currently captured in residential recycling programs is marketed.

[10] Assuming all PET not currently recovered is collected and marketed at CSR's July/00 published price of $278/tonne FOB the municipality.

[11] Assuming all HDPE not currently recovered is collected and marketed at CSR's July/00 published price of $305/tonne FOB the municipality.

Table 3-2
Ten of Ontario's High Performing Recycling Programs

Community	Recovery Rate kg/hh/yr	Composting Rate kg/hh/yr	Average Waste Generation Rate kg/hh/yr	Diversion Rate through Recycling	Diversion Rate through Recycling and Composting	Population
1. Markham	270	186	990	27%	46%	162,500
2. Barrie	238	153	1,320	18%	30%	93,000
3. Peterborough	235	114	750	31%	47%	72,000
4. Caledon	226	159	1,120	20%	34%	45500
5. RMOC	211	n/a	1,000	21%	n/a	760,000
6. Northumberland	211	13	680	31%	33%	79,100
7. Quinte	210	132	810	26%	42%	67,800
8. Georgina [12]	175	n/a	816	21%	n/a	32,650
9. Toronto	145	100	1,133	13%	22%	2,400,000
10. Essex-Windsor	131	132	946	14%	28%	352,300
Average	205	124	957	21%	34%	

Several technical/system innovations have been successfully introduced in Ontario over the past five years (and some of the "lower tech" high diversion programs have been in place for over a decade). In examining the characteristics of some of the "high performing" programs in the province, a few notable trends can be identified:

- "high performers" tend to have moved towards a more integrated approach to waste diversion - i.e. including organics diversion, special waste programs/days, material recovery from public spaces;
- many of the programs have incorporated innovative technologies - e.g. wet/dry processing systems; co-collection vehicles; automated chutes for high-rise buildings;
- "high performers" tend to have established and maintained on-going communication and education programs;
- most of these programs include bag limits and/or other user pay measures.

The 1999 average per household recovery rate for nine of the top curbside programs in the province was 213 kg/hh/yr, approximately 17% higher than the current provincial average. If this level of performance were achieved in the year 2005 (assuming a straight-line growth rate between 2000 and 2005 and a blended average between SF and MF dwellings), total recyclables recovered is projected to be approximately 880,000 tonnes. This level of performance would represent a

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[12] The average waste generation rate for Georgina was not available from this municipality. For planning purposes, this estimate was calculated as the average of the top rural programs.

243,000 tonne increase compared to 1999, and is essentially the recycling level projected in the "Middle Ground" scenario as described below.

3) Reward Diversion

Perhaps the most successful recycling program development in the province has been the evolution of bag limits on disposal and user pay programs. The "user pay" approach to support recycling is simple to understand, but often difficult to implement. User pay has several variable approaches, but the essential idea is that a household pays for the cost of disposal in proportion to the amount of waste generated (i.e. on a per bag or per container basis). User pay helps to drive diversion when the opportunity to recycle (and/or compost) is well developed.

Of the high performing programs listed in Table 3-2, seven have some form of bag limit or user pay system: Markham (3 bag limit); Barrie (2 bag limit and bag tag); Peterborough (2 bag limit); RMOC (5 bag limit); Northumberland (bag tags for wet materials); Quinte (user pay); and Georgina (user pay).

As of early 2000, approximately 106 municipal programs – covering 500,000 households and 1.1 million people (approximately 10% of the province's 11.5 million population) - had bag limits or user pay systems in place in Ontario. Approximately 45 programs have been implemented since 1997. To date, small to mid-size communities have been the focus of user pay/bag limit programs, with St. Catherines (population 131,000) the largest to date.

While this is still a somewhat politically charged issue, the evidence indicates that any attempt to achieve "order of magnitude" increases in residential waste diversion in Ontario would require some form of landfill disposal bans to regulate diversion and/or user pay system to reward maximum recycling.[13] For example, data from the Georgina and Orillia programs indicate the impact of user fees as follows:

- **Georgina**: 40% reduction in the weight of garbage disposed and a 42% increase in the amount of recyclables collected in the blue box program. (Data collected one year after the implementation of the user pay program).

- **Orillia**: After the first year of operation, garbage disposal was down 28% and Blue Box up 22%; sales of composters increased from 250/year to 1,100/year.

AMRC and CSR research suggests the following broad impacts on waste diversion rates:

- Full user pay with no free bags: increase diversion by 30-50%
- Partial user pay with 1 free bag: increase diversion by 25-35%
- Partial user pay with 2 free bags: increase diversion by 15-25%
- Partial user pay with 3+ free bags: increase diversion by 5% of less.

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[13] The potential diversion impact of user pay programs is thought to be more significant on the organics stream than dry recyclables. The advantages and disadvantages of user pay programs were addressed in the interim report to the Minister and will be addressed in the final report.

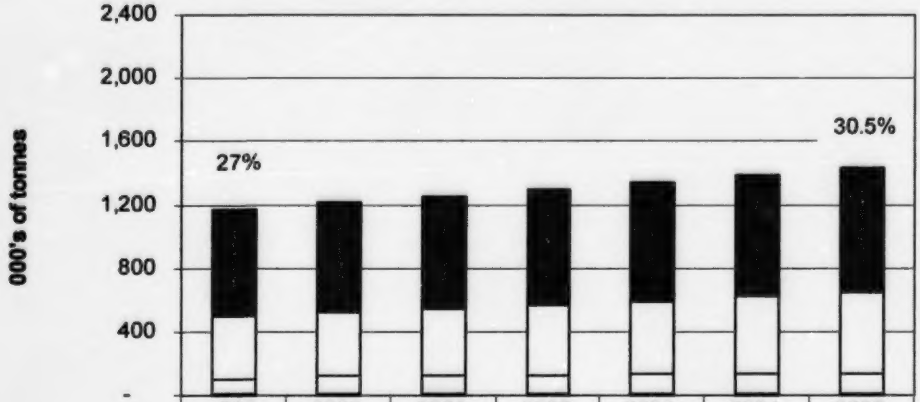
In summary, the three most likely sources for future recycling tonnage growth in Ontario would appear to be a combination of three factors: enhanced performance of existing systems (i.e. improving capture and recovery); adding new programs/systems (e.g. effective multi-family systems, wet/dry systems) and rewarding diversion effectiveness (e.g. through user pay). Each of these opportunities is examined in some detail in the next sections of this plan.

3.4 2005 Recycling Scenarios

3.4.1 Current Momentum Scenario – Description and Assumptions

As shown in Figure 1, the Year 2005 target for this scenario is 787,000 tonnes of recyclables from the residential sector. Figure 1 also projects parallel growth in organics and household special waste (HSW). This level of activity represents an 18% increase - or 120,000 tonnes - compared to the 667,000 tonnes collected in 1999. Between 1999 and 2005, average annual growth is projected to be 20,000 tonnes per year.

Figure 1
Current Momentum Scenario Diversion Projections



	1999	2000	2001	2002	2003	2004	2005
■ Recycling	667	687	707	727	747	767	787
□ Organics	393	403	421	434	460	488	503
□ Bulky Recycling	100	116	119	122	125	128	131
□ HSW	6	7	7	8	9	9	10

This recovery target is based on the assumption that the existing recycling system will continue to evolve over the next five years with some level of innovation but in a minority of communities. Generally, this scenario assumes limited growth in three stream separation systems for SF households and partial provision of mixed waste processing services to Toronto MF units. Key variables for change over the next five years necessary to reach the Scenario 1 recovery target are listed in Table 3-3 with a description of the broad program assumptions underlying the year 2005 recovery target provided below.

- The total number of MF households with access to recycling services will increase to 80% in 2005 through the expansion of existing programs or introduction of new services (e.g. mandatory recycling services in MF buildings with private collection services).
- The number of SF households with access to recycling services will increase from 97% in 1999 to 100% in 2005 (excluding the northern regions of the province).
- By 2005, 500,000 SF households will be provided with a three-stream collection system and will achieve an 80% capture rate for an average recovery rate of 286 kg/hh/yr.
- The remaining 2.5 million SF households will achieve an average recovery rate of 218 kg/hh/yr, a 5% increase compared to the 1999 rate. At 218 kg/hh/yr, the year 2005 projected average SF recovery rate would roughly fall in the middle of the current list of 10 high performing programs (as listed in Table 3-2).
- Approximately 50% of Toronto MF units (225,000 dwellings) will be served with a mixed waste processing system resulting in an average recovery rate of 160 kg/hh/yr.
- Recovery rates in the remaining MF households in the province with access to recycling services would remain constant.

Table 3-3
Scenario 1 Key Variables

Item	1999 Figures	2005 Estimates
SF households with access	2,922,600	2,999,000 *
MF households with access	732,900	1,022,400 *
Average SF Recovery Rate	208 kg/hh/yr	218-286 kg/hh/yr
Average MF Recovery Rate	78 kg/hh/yr	78-160 kg/hh/yr
Blended Household Diversion Rate **	182 kg/hh/yr	215 kg/hh/yr
Estimated Residential Waste Diversion Rate	16%	19%

* Note: For the purpose of calculating future amounts of tonnes recycled, 2005 estimates for households with access to recycling do not include the Northeast and Northwest regions of the province.

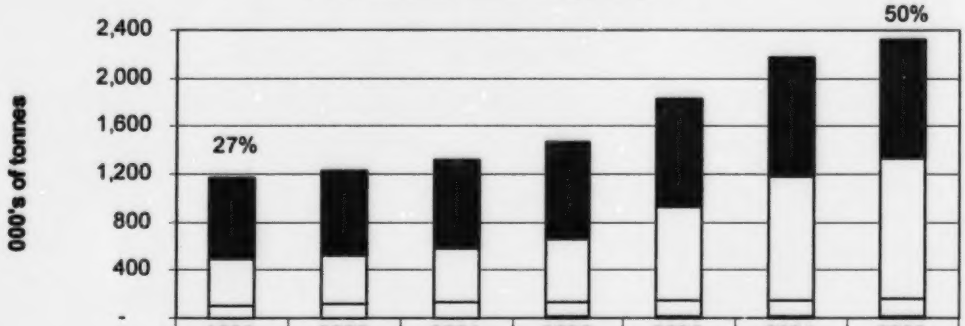
** The blended household recovery rate was calculated as the total number of tonnes recycled (SF and MF combined) divided by the total number of SF and MF household with access to recycling services.

3.4.2 50% Diversion Scenario – Description and Key Assumptions

As shown in Figure 2, the target for 2005 for this scenario is 1.0 million tonnes of recyclables from SF and MF households. Figure 2 also illustrates the annual growth required to get to 50% diversion, and the comparative contribution needed from organics diversion. The achievement of this target would represent a 50% increase - or 333,000 tonnes - compared to the 667,000 tonnes collected in 1999.

In order to reach the 1.0 million tonne diversion target, a considerable increase in recovery rates compared to existing levels would be required. As shown in Table 3-4, the number of MF units served would have to increase 24% to 1.1 million dwellings, which is 90% of the projected year 2005 MF household stock. Given that a significant percentage of MF dwellings are serviced by private contractors, measures would likely need to be taken to ensure the provision of recycling services to these dwellings. Average blended household recovery rates would need to increase in the order of 50%.

Figure 2
50% Diversion Scenario Projections



	1999	2000	2001	2002	2003	2004	2005
■ Recycling	667	702	738	810	898	986	1,000
□ Organics	393	403	458	526	779	1,035	1,168
□ Bulky Recycling	100	116	124	132	140	145	151
□ HSW	6	7	7	8	9	9	10

In particular, the blended household recovery rate for the entire province would have to increase to a level that compares with rates currently achieved by a small number of high performing programs. If these levels of performance were to be achieved, province-wide bag limits and user fees would be needed.

Table 3-4
50% Diversion Scenario Key Variables

Item	1999 Figures	2005 Estimates
SF households with access	2,922,600	2,999,000 *
MF households with access	732,900	1,150,000 *
Average SF Recovery Rate	208 kg/hh/yr	304 kg/hh/yr
Average MF Recovery Rate	78 kg/hh/yr	71-167 kg/hh/yr
Blended Household Diversion Rate **	182 kg/hh/yr	249 kg/hh/yr
Estimated Residential Waste Diversion Rate	16%	25%

* Note: For the purpose of calculating future amounts of tonnes recycled, 2005 estimates for households with access to recycling do not include the Northeast and Northwest regions of the province.

** The blended household recovery rate was calculated as the total number of tonnes recycled (SF and MF combined) divided by the total number of SF and MF household with access to recycling services.

Key program assumptions underpinning the year 2005 recovery target are described below.

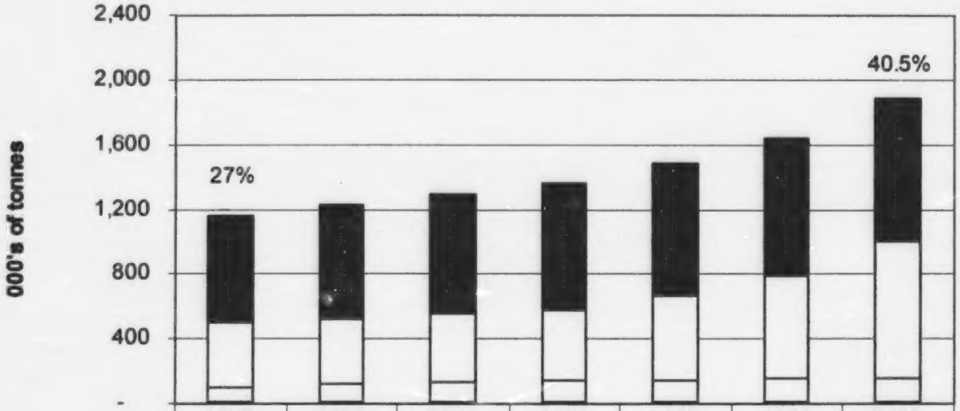
- As a whole, SF households would need to achieve an average capture rate of 85% for all recyclables generated for an average recovery rate of 304 kg/hh/yr.
- It was assumed that 98% of all Toronto MF households would be provided with a level of service that could capture 70% of all recyclables generated for an average recovery rate of 167 kg/hh/yr.
- The majority of the remaining MF households in the province were assumed to capture 30% of recyclables generated for an average recovery rate of 71 kg/hh/yr.
- In total, 90% of all MF households in the province would be provided with access to convenient on-site/neighborhood recycling services.

3.4.3 Middle Ground Recovery Scenario – Description and Analysis

As shown in Figure 3, the year 2005 recycling target for this scenario is 880,000 tonnes. This level of performance represents a 32% increase - or 213,000 tonnes - compared to the 667,000 tonnes collected in 1999.

The 880,000 tonne recovery target requires an expansion of service to MF households (along with improved recovery rates) and an increase of SF recovery rates to a range that is now achieved by top performing programs across the province. It also anticipates limited implementation of an intensive 2 or 3-stream system and an increase in the number of user pay programs in the province.

Figure 3
Middle Ground Scenario Diversion Projections



	1999	2000	2001	2002	2003	2004	2005
■ Recycling	667	702	738	773	809	844	880
□ Organics	393	403	423	444	524	638	845
□ Bulky Recycling	100	116	124	132	140	145	151
□ HSW	6	7	7	8	9	9	10

Table 3-5
Scenario 3 Key Variables

Item	1999 Figures	2005 Estimates
SF households with access	2,922,600	2,942,000 *
MF households with access	732,900	1,150,000*
Average SF Recovery Rate	208 kg/hh/yr	242-312 kg/hh/yr
Average MF Recovery Rate	78 kg/hh/yr	80-187 kg/hh/yr
Blended Household Diversion Rate **	182 kg/hh/yr	215 kg/hh/yr
Estimated Residential Waste Diversion Rate	16%	21%

* Note: For the purpose of calculating future amounts of tonnes recycled, 2005 estimates for households with access to recycling do not include the Northeast and Northwest regions of the province.

** The blended household recovery rate was calculated as the total number of tonnes recycled (SF and MF combined) divided by the total number of SF and MF household with access to recycling services.

Key variables for the Middle Ground scenario are listed in Table 3-5 with a description of the important program assumptions underpinning the year 2005 recovery target provided below.

- ☐ Three levels of SF recovery rates are assumed. A limited number of households (e.g. approximately 165,000) will capture 80% of recyclables generated for an average recovery rate of 286 kg/hh/yr.
- ☐ Approximately 1.7 million SF households will increase recovery rates to 268 kg/hh/yr. This level of performance is on par with top programs currently operating in the province.
- ☐ Approximately 1.1 million SF households will increase recovery rates by 5% to 235 kg/hh/yr.
- ☐ The treatment of multi-family units is the same as that described in Scenario 2: 98% of all Toronto MF households would be provided with a level of service that could capture 70% of all recyclables generated for an average recovery rate of 167 kg/hh/yr. The majority of the remaining MF households in the province were assumed to capture 30% of recyclables generated for an average recovery rate of 71 kg/hh/yr.

3.5 Recycling System Cost Estimates

3.5.1 Key Cost Factors – 1999 Cost Calculations

Two key sets of cost factors determine the estimated cost of recycling: the gross cost of the service (i.e. including collection and processing) and the revenues from the sale of materials (commonly called the "basket of goods" in curbside programs). One of the important tasks in the WDO process has been to undertake the necessary research to more accurately determine the current cost of recycling in the province.

Table 3-6
Ontario-Wide 1999 Recycling Costs

Area	% of tonnes	Net Cost/tonne	Notes
Large Urban (CAO)	58%	$84	Capital and administration included
Multi-Family (RCO)	10.2%	$80	Capital and administration included
Small-Rural (AMRC)	3.0%	$242	Most capital not included
Total/Average	100%	$99	

The data presented in Table 3-6 are based on municipal reports representing 98% of 1999 municipal tonnes reported and 72% of municipal costs reported. This research was undertaken in the spring of 2000 through a co-operative effort between the WDO and the CAO (Chief Operating Officers) Benchmarking initiative and has produced results which are more inclusive of municipal capital and administrative costs than previous reports have generally provided.

As shown in Table 3-6, the net blended basket of goods cost of collecting, processing and marketing recyclables in 1999 was estimated to be $99/tonne. This net cost estimate includes revenue, operating costs, the amortized cost of capital replacement and a blended range of costs observed in small and rural communities, mid-size towns and large urban centres. Assuming 1999 recovery at 667,000 tonnes, municipalities across the province spent approximately $66.0 million on recycling programs, as summarized in Table 3-6.

3.5.2 Future Cost Scenarios [14]

Future costs of recycling will depend on the gross cost of collection and processing as well as the value of the "basket of goods" revenue. Since 1997, the basket of goods revenue has remained constant and shows a slight upward trend. Combined with stable gross collection and processing costs, the net cost of recycling is expected to decline slowly over the next five years. It should be noted however that the municipal revenue estimates used for 1999 calculations do not fully capture the stronger commodity value in the current market (i.e. where contractor's revenue share could be as much as 100%). Thus, the municipally reported basket of goods value may be lower than current actual market value (e.g. because of contract terms).

Table 3-7 projects gross, net and system cost estimates for the period 1999-2001. Figures 4 and 5 present the future cost scenarios both in terms of costs per tonne (Figure 4) and total system cost (Figure 5).

Table 3-7
Projected Recycling Costs

Item	1999	2000	2001
Gross Collection/Processing	$187/tonne	$187/tonne	$185/tonne
Revenue	($88)/tonne	($128)/tonne	($131)/tonne
Net Cost	$99/tonne	$59/tonne	$54/tonne
Tonnes	667,000	702,000	738,000
System Cost	$66.0 million	$41.4 million	$40.5 million

As shown in Table 3-7, Year 2000 net recycling costs are expected to drop to $59/tonne due, in part, to stable collection and processing costs combined with rising revenue streams. For similar reasons, projections for 2001 suggest that recycling costs will continue to decline (though it is recognized that cyclical markets could drive prices to levels that vary significantly from our projections.) Assuming recovery at 702,000 tonnes, Year 2000 expenditures on residential recyclables is estimated to be $41.4 million. In 2001, total expenditures are expected to decline slightly to $40.5 million.

---

[14] All future cost estimates are in year 2000 dollars.

As shown in Figure 4, three sets of net costs were developed for Year 2005. The 50% diversion scenario cost estimate - $64/tonne - is highest among the three, based on the high cost of anticipated capitalization and increased recovery of low-revenue materials.

With recovery projected at 1.0 million tonnes, expenditures in 2005 are estimated to be $64.0 million, as shown in Figure 5. For the Current Momentum scenario, the average blended net cost of recycling in 2001 is projected to be $54/tonne and - owing to slightly higher revenue streams and projected lower collection and processing costs - is expected to remain constant through 2005. With 787,000 tonnes projected for collection in 2005 - annual expenditures are estimated to be $42.5 million.

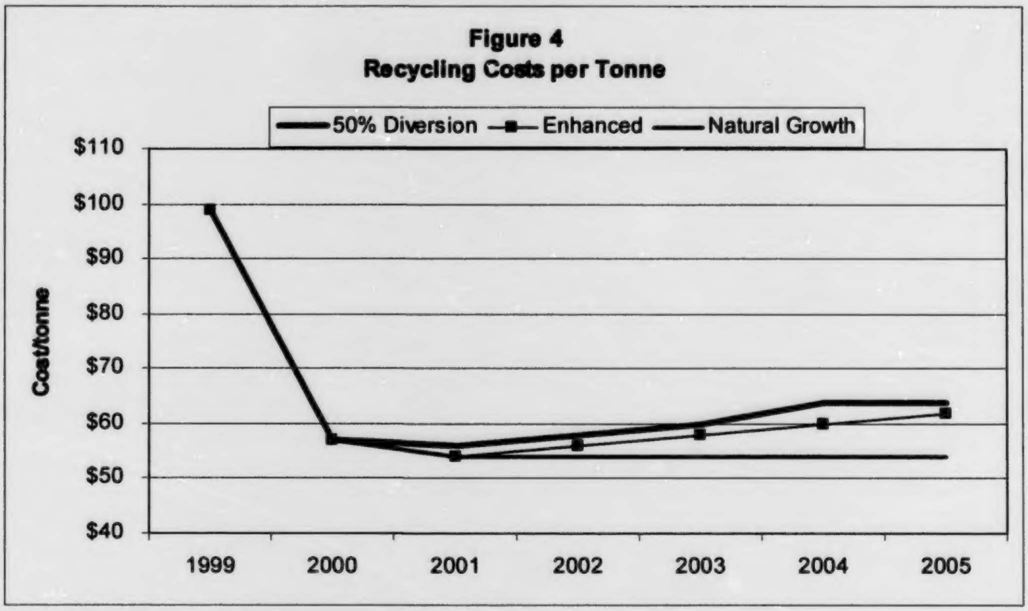
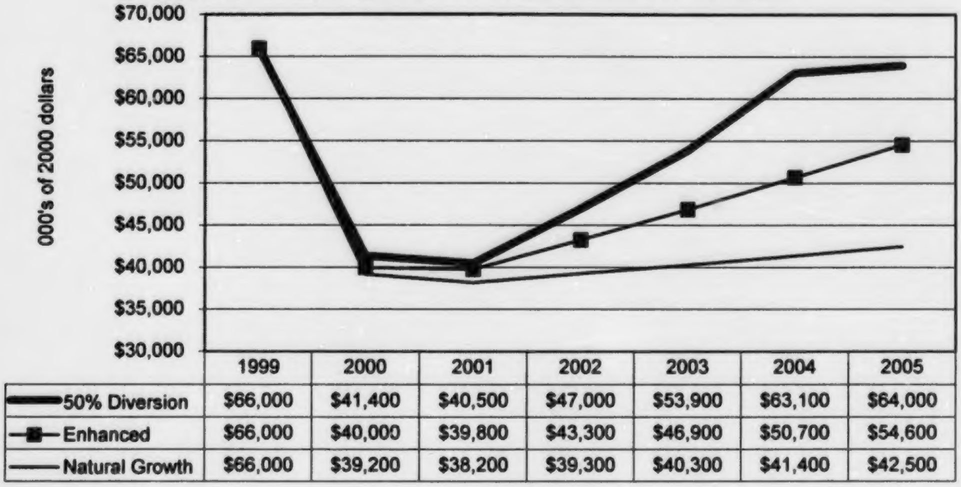


Figure 4
Recycling Costs per Tonne

Currently, the province-wide average cost of collecting, transferring and disposing of curbside garbage is estimated to be between $80 and $100/tonne. The cost for multi-family dwellings is in the range of $35 to $55/tonne. Assuming 2% inflation per annum, the Year 2005 cost range of garbage disposal is estimated to be $100/tonne and $50/tonne for curbside and multi-family respectively.

Based on these figures and the assumptions noted earlier, the Year 2005 cost of recycling curbside recyclables is expected to be less than the cost of treating this residential material as garbage. In contrast, the net cost of recycling material from multi-family dwellings is expected to be higher than the cost of garbage disposal.

Figure 5
Projected Recycling Costs for Three Scenarios:1999-2005



	1999	2000	2001	2002	2003	2004	2005
50% Diversion	$66,000	$41,400	$40,500	$47,000	$53,900	$63,100	$64,000
Enhanced	$66,000	$40,000	$39,800	$43,300	$46,900	$50,700	$54,600
Natural Growth	$66,000	$39,200	$38,200	$39,300	$40,300	$41,400	$42,500

4.0 Key Recycling Issues in Ontario to be Resolved

The residential recycling system in Ontario has grown considerably over the past 15 years. The next five years are full of significant opportunities, but also challenges. This section of the report summarizes four of the key challenges to be addressed.

i) Optimizing the provincial network of Materials Recycling Facilities (MRFs)

There are more than 60 facilities in the province that process dry recyclable materials collected from curbside programs. Some of the facilities serve comparatively large regions and process several thousand tonnes of material each year. Others are quite small and operate only on a part time basis as sufficient material is collected for processing (e.g. in parts of Northern Ontario). In addition some facilities process both residential recyclables and materials collected from industrial, commercial and institutional sources. Two fundamental questions over the next 5 years are: is new capacity required to process the additional materials that will be collected in the future and, how can the processing system be optimized in terms of cost effectiveness? WDO is conducting research on how MRF operations can be improved (e.g. regionalized processing facilities) and is examining more cost effective ways to transport collected materials, particularly in rural areas.

ii) Multi-family recycling

A critical challenge in terms of the future growth of the recycling system in the province is increasing recovery from the MF sector. As noted earlier, almost 30% of households in the province are multi-family. Two specific issues are: how to improve the performance of existing MF recycling programs and how to add new programs, through public or private sector systems, in a way that is both cost effective and high performing. Retrofit systems can be added to existing buildings (i.e. chute systems for recyclables), but generally have high capital costs. Some municipalities require new high-rise buildings to provide the opportunity to recycle in a form that is as convenient as the disposal system. Adding the MF sector to the provincial recycling system in a way that is cost effective and high performing is the next stage of evolution in the province's dry recycling system.

iii) Market Development

All of the recycling growth scenarios include the addition of quantities of new materials. Two of the key materials are mixed residential fibres and household plastics. Mixed fibres are especially important because there is an opportunity to increase the recovery of these materials from the residential sector (whereas ONP, by contrast, has little room for new growth because capture rates – at least from single family households - are already high). Traditionally, markets for mixed residential fibres have gone "soft" as the economy slows. Since mixed fibres will be such an important part of new growth in recycling, stabilizing markets for these materials will be especially important in the future.

The other anticipated growth area is mixed plastics. As plastics replace traditional materials (such as glass and steel) in the packaging stream, the overall weight of packaging declines, but some of these materials are expensive to recover through recycling. WDO is working this year with the plastics industry in Ontario to prepare a market development strategy for plastics.

Continued (and stable) growth in the value of the "basket of goods" collected in recycling programs is fundamental to reducing total system costs.

iv) Integrating Recyclables, Organics and Special Waste Diversion

This is another core challenge for the Ontario waste diversion system. The recycling infrastructure is well established and can be grown. But a key issue will be to link this growth especially with the growth of new and improved organics collection systems. Ontario has already been an innovator in the development of co-collection systems (i.e. the collection of recyclables with organics and/or with regular household garbage). It can be anticipated that the next stage of system growth will need to continue to experiment with and adopt cost-effective ways of better integrating diversion systems (including appropriate special household wastes as well). A related area of interest for WDO is the examination of not only the potential economic efficiencies of more integrated waste management systems, but also the environmental benefits (including for example reductions in greenhouse gases from the increased use of recycled materials).

WDO
ONTARIO
WASTE DIVERSION
ORGANIZATION

Programs Committee: Organics Task Group

Interim Five-Year Plan

To Increase Diversion Of Residential Organic Waste To Contribute To The Provincial 50% Diversion Objective

16 August, 2000

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EXECUTIVE SUMMARY

Backyard composting and leaf and yard waste collection programs are well developed in Ontario at this time, and together divert an estimated 393,000 tonnes/year (281,000 tonnes curbside collection and 112,000 tonnes through backyard composters). A handful of communities have comprehensive organics collection programs (Guelph, St. Thomas, Caledon, etc.) which divert up to three times the amount of organics per household than other programs. Many Ontario communities have evaluated comprehensive organics collection programs, but have not proceeded.

The benefits of organic waste diversion include conservation of valuable landfill capacity, a reduction of acid generation in landfills and therefore metal precipitation in landfill leachate, reduced greenhouse gas production and conservation of organic material which can be used as a soil conditioner.

The Memorandum of Understanding (MOU) for the Waste Diversion Organization tasked the Organics Task Group to look at options to reach 50% diversion. The work of the Organics Task Group estimated that about 1.17 million tonnes/year of residential organic material, or 775,000 tonnes/year more than the current diversion levels would need to be diverted to achieve a 50% overall diversion target.

Recovery of an additional 775,000 tonnes/year of residential organic material would require 2.5 million single-family households, or virtually all urban single-family households in Ontario, including Northern Ontario, to implement comprehensive curbside organics programs. In addition, waste from half of the multi-family households in the Province would have to be processed in mixed waste processing facilities to recover the additional organics required to meet the target. This is not considered a realistic target within a five-year timeframe, given the timing of current contracts in the province, as well as the time required to site composting facilities which can handle residential food waste, obtain a Certificate of Approval, and award the contracts required.

Current composting capacity for source separated organic waste in Ontario is about 519,300 tonnes/year, of which 275,000 tonnes/year is already used by the municipal sector, and some of the remaining 244,300 tonnes is already used by the IC&I sector. An estimated capital cost of $240 million is involved to add the capacity required to process the 600,000 tonnes/year of additional source separated organic material which would be recovered from single-family households.

In addition, a substantial amount of organic waste from multi-family households is not readily amenable to source separation, and is not readily available for recovery, except through mixed waste processing. The capital cost of the facilities required to handle this component of the organics waste stream is estimated at $190 million.

The overall system costs to handle 1.1 million tonnes of organic waste are estimated at about $179 million per year (including amortized capital), which is an increment of $89 million more than the current system.

A more realistic, but still very aggressive strategy would involve diverting a total of 845,000 tonnes/year of organics, or about 452,000 tonnes/year above existing levels. This would involve roll-out of comprehensive curbside organics collection to 2 million single family households and mixed waste processing of garbage from 275,000 multi-family households, with all remaining households in the Province diverting organic waste through a combination of backyard composting and leaf and yard waste recovery. This strategy is considered feasible within a five-year timeframe, if the appropriate legislative and financial supports are in place.

The costs of the alternate strategy are currently estimated at $59 million/year more than the status quo, or what is currently expended on management of the organic portion of the waste stream. These estimates can be refined when results of WDO supported research are available.

Municipalities are not willing to bear the additional $59 million/year cost, as the benefits of diverting 50% of the waste stream, particularly if it costs more, are not clear. In addition, municipalities feel that if the province wants to divert 50% of waste, it should pay the incremental cost. The Province provided significant start-up assistance, and on-going operating cost assistance to municipalities for five years, to get the recycling system off the ground, and the suggestion has been made that the province consider the same support for organics.

The Organics Task Group has identified the need for both start-up capital funding, to "prime the pump" and get the organics system infrastructure in place, and also assistance with on-going operating costs, to make the net costs of organics comparable to handling the same waste stream as garbage. Without financial assistance, Ontario municipalities will not move forward on implementing organics diversion programs in the current climate of fiscal restraint.

The Organics Task Group recognizes the difficulty of constructing a funding formula for organics diversion programs. About one-third of the organics waste stream is leaf and yard waste, for which there is no clear brandowner. An additional half consists of food waste (about 70% of the food in the waste stream is considered difficult to identify with a specific brandowner). The remaining 16% is compostable papers. Brandowners can be identified for the paper materials in the organics stream, but they are not a large component of this waste stream.

Landfill bans on organics are seen as a necessary element of a strategy to divert significant quantities of organic material from disposal. Private sector companies who own and operate landfills have expressed serious concerns about the enforceability of landfill bans. They feel that enforcement will be difficult and needs to occur at the curb. This complicates and slows down the collection process, thereby increasing collection costs.

Regionally appropriate landfill bans on leaf and yard waste, followed by a later ban on all organic waste may be an appropriate roll-out strategy. User pay is seen as an effective policy to increase participation in source separation programs for organics, but Provincially mandated user pay programs are not supported.

Market development for compost products is critical to the success of any organics diversion strategy, to ensure that the product can be put to its highest and best use, and that stable and high revenues can be secured from the sale of the end product. Standards and quality control will improve consumer confidence in the compost product, and will increase the value of compost.

1.0 INTRODUCTION

The purpose of the Waste Diversion Organization (WDO) as set out in the Memorandum of Understanding (MOU) is to identify methods by which 50% diversion can be achieved (including the costs involved), and prepare recommendations with respect to the design of longer term funding arrangements for waste diversion. (Part 2, Section 1).

Part IV of the MOU states the role of the WDO with respect to organic waste diversion to be:

To expend up to $2 million towards the advancement of organic waste diversion, in particular:

- *$50,000 in support of educational programs encouraging organic waste diversion, including support for International Composting Awareness week; and*
- *up to $1,950,000 for the development and implementation of a program to assist municipalities with 50% of the cost of developing and establishing organic waste diversion systems, such as centralized composting facilities and organic digestion facilities. Eligible capital costs shall include planning, design, engineering, construction and equipment costs for such facilities.*

Part IV (D) (a) (ii) states one of the roles of the WDO is to develop options for a long term sustainable funding formula prescribing appropriate levels of annual contribution and appropriate sources of contribution for long term continuation of funding *for the future continuation of the programs set out in Part IV "C"* (organics, HHW and recycling*). Estimates of the necessary totals for the five ensuing years shall be provided along with an evaluation of the trends thereafter.*

The Organics Task Group of the Waste Diversion Organization (WDO) Programs Committee were tasked with developing a strategy to divert an additional 700,000 to 1 million tonnes of organic waste from residential sources, in order to reach the 50% goal stated in the MOU. The Organics Task Group were also directed to provide input to the Funding and Regulations Committee on the funding options and regulatory requirements necessary to achieve the 50% goal.

The benefits of organic waste diversion include conservation of valuable landfill capacity, a reduction of acid generation in landfills and therefore metal precipitation in landfill leachate, reduced greenhouse gas production and conservation of organic material which can be used as a soil conditioner.

The strategy developed by the Organics Task Group (OTG) to divert significant amounts of residential organic waste is presented in this document, along with a summary of discussions regarding a sustainable funding formula, and regulatory options which would be required to meet this goal.

2.0 RESIDENTIAL ORGANIC WASTE GENERATED IN ONTARIO

2.1 Ontario Population and Household Breakdown

In 1999, the population of Ontario was reported to be 11,513,000. As shown in Table 2-1, there were approximately 4.23 million households in the province (1999 estimate). Of this total, approximately 71%, or 3.01 million, were single-family (SF) dwellings. The remaining 29% were multi-family (MF) units, estimated to be 1.22 million units.

Table 2-1 shows SF and MF household estimates for nine regions in the province for communities with a population greater than 5,000. The table also shows the number of households in small communities (defined as towns with a population less than 5,000) and in Northwestern and Northeastern Ontario. Based on these definitions, 80% of 1999 Ontario households were located in 'urban' communities (i.e. in a municipality with a population greater than 5,000 or in southern Ontario).

Table 2-1
Ontario Household Estimates for 1999

Region	Total HH	SF HH	MF HH
GTA	1,550,453	852,700	697,800
Hamilton - Niagara	465,355	372,300	93,100
Ottawa	418,406	355,600	62,800
Windsor - Sarnia	215,385	193,800	21,600
London	222,904	178,300	44,600
Muskoka - Kawarthas	137,496	137,500	-
NE Ontario	148,390	133,600	14,800
Kingston-Pembroke	140,722	126,600	14,100
Kitchener - Waterloo - Barrie	140,722	112,600	28,100
Stratford - Bruce Peninsula	86,141	77,500	8,600
NW Ontario	60,293	54,300	6,000
Small communities	651,700	418,200	233,500
Total	4,237,967	3,013,000	1,225,000
Exclude North and Small	**3,377,584**	**2,406,900**	**970,700**

Table 2-2
Housing Stock Projections 1999-2005

Year	SF HH	MF HH	Total
1999	3,013,000	1,225,000	4,238,000
2000	3,043,100	1,237,300	4,280,400
2001	3,073,500	1,249,700	4,323,200
2002	3,104,200	1,262,200	4,366,400
2003	3,135,200	1,274,800	4,410,000
2004	3,166,600	1,287,500	4,454,100
2005	3,198,300	1,300,400	4,498,700

Household projections for 2000 to 2005 are shown in Table 2-2. These projections are based on a planning estimate of 1% growth per annum for both SF and MF dwellings in the province. Based on this assumption, the provincial housing stock is projected to grow by 260,000 units in 2005.

2.2 Estimated Generation of Residential Organic Waste in Ontario

The estimated amounts of organic household waste generated by SF and MF households in Ontario, along with the composition of the generated quantities, and the amount diverted and currently disposed is shown in Table 2-3.

Table 2-3
Quantities of Residential Organic Waste Generated, Diverted and Disposed by Household Type in Ontario in 1999

Item	SF HHs	MF HHs	TOTAL RESIDENTIAL
HHs in Province	3,013,000	1,225,000	4,238,000
Waste Generation Rate (tonnes/hh/year)	1.100	0.635	
Waste Generated (tonnes/year)	**3,314,300**	**777,900**	**4,092,200**
Organics Composition	**45.0%**	**41.8%**	
% Food	19.8%	32.4%	
% Leaf and Yard Waste	17.9%	1.0%	
% Disposable diapers	3.6%	5.0%	
% Compostable paper	3.7%	3.4%	
Total Organics Generated (tonnes/year)	**1,491,400**	**325,100**	**1,816,500**
Food	656,200	252,000	908,200
Leaf and Yard Waste	593,300	7,800	601,100
Disposable diapers	119,300	38,900	158,200
Compostable paper	122,600	26,400	149,000
Organics Generation by HH (kg/HH/year)	**495**	**265**	**429**
Food	218	206	214
Leaf and Yard Waste	197	6	142
Disposable diapers	40	32	37
Compostable paper	41	22	35
Diverted kg/hh/yr	128	-	91
Organic Waste Diverted (tonnes/year)	**393,000**	**-**	**393,000**
Food	73,000	-	73,000
Leaf and Yard Waste	320,000	-	320,000
Disposable diapers	-	-	-
Compostable paper	-	-	-
Organic Waste Disposed (tonnes/year)	**1,098,400**	**325,100**	**1,423,500**
Food	583,200	252,000	835,200
Leaf and Yard Waste	273,300	7,800	281,100
Disposable diapers	119,300	38,900	158,200
Compostable paper	122,600	26,400	149,000

3.0 RESIDENTIAL ORGANIC WASTE RECOVERY ESTIMATES FOR DIFFERENT SCENARIOS

This section outlines the amount of residential organic waste potentially recoverable in Ontario under a number of different scenarios. This has been done to assess the feasibility of recovering the additional 1 million tonnes of residential organic waste required to achieve a 50% diversion target.

3.1 Maximum Potential Recovery Estimate

Table 3-1 presents estimates of the maximum residential organic waste recovery potential from SF and MF homes throughout Ontario, using 1999 households and waste quantities for illustration.

Table 3-1
Potential Maximum Recovery of Residential Organic Waste from Communities with Populations Greater than 5,000 in all Regions of Ontario (1999 Household Estimates)

1. Scenario 1 - Maximum Recovery at 300 kg/hh/yr for SF HHs *			
	SF	MF	Total
HHs served	2,594,800	991,500	3,586,300
Organics Diversion Rate (kg/hh/yr)	300	265	
Potential Tonnes Diverted	**778,000**	**263,000**	**1,041,000**
2. Scenario 2 - Maximum Recovery at 400 kg/hh/yr for SF HHs *			
	SF	MF	Total
HHs served	2,594,800	991,500	3,586,300
Organics Diversion Rate (kg/hh/yr)	400	265	
Potential Tonnes Diverted	**1,038,000**	**263,000**	**1,301,000**

* Some figures may not sum due to rounding.

Table 3-1 shows that the goal of recovering 1 million tonnes or more of organic waste from residential sources in Ontario is feasible, but requires comprehensive organics service to virtually all households in the Province. This comprehensive service level is assumed to be curbside organic waste pick-up for the remainder of this document, as this approach is the only one which yields high enough recovery per household to achieve the targets. Other approaches such as drop-off depots provide good service levels to those interested in participating, but are somewhat less convenient than curbside pick-up, and therefore lower overall participation and overall organics recovery would be expected.

All towns and cities with a population of greater than 5,000 were included in the estimates to align the organics recovery estimates with the requirements of the existing provincial 3Rs regulations which mandate recycling for communities with populations greater than 5,000. It should be noted that some small communities (i.e. with a population less than 5,000) may implement or expand their existing organics diversion programs - thereby increasing diversion totals presented in Table 3-1. Estimates to address this activity are included later in the document. Estimates presented in this document were developed assuming the following recovery values:

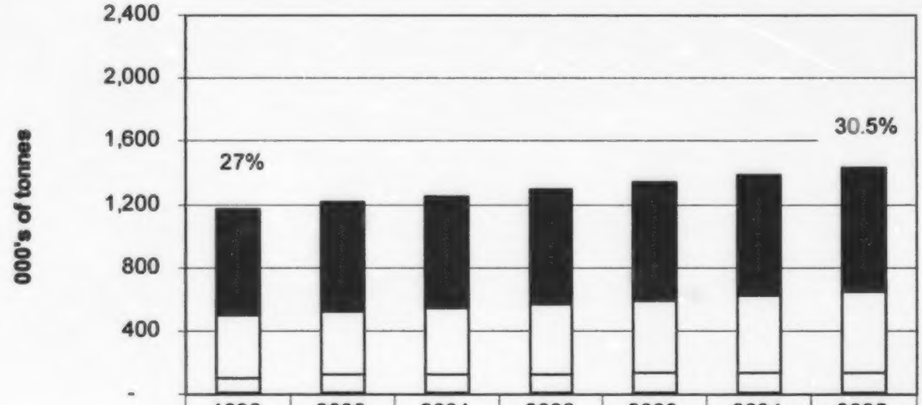
- SF - 300 kg/hh/yr (60% recovery), no user pay;
- SF - 400 kg/hh/yr (80% recovery), with user pay, and
- MF - 265 kg/hh/yr (100% recovery) assuming all MF garbage (635kg/household/year) goes through a mixed waste processing plant.

Table 3-1 also shows that the maximum feasible recovery of organic waste from residential sources in Ontario (including all Northern Ontario and MF households - but excluding households in communities with a population less than 5,000) is about 1.3 million tonnes (in 1999 figures). Assuming about a 5% growth rate between the year 2000 and 2005, this total might increase to approximately 1.45 million tonnes.

3.2 Recovery Scenario #1 – Current Momentum

Figure 1 shows a "Current Momentum scenario" for organics, where an estimated 503,000 tonnes/year of organics from the residential sector (Figure 1 also projects parallel growth in recyclables and HSW) are recovered by the year 2005. This level of activity represents 110,000 tonnes more than the estimated 393,000 tonnes diverted in 1999. The 1999 estimate includes 281,000 tonnes collected for central composting, and an estimated 112,000 tonnes diverted through 1.1 million backyard composters.

Figure 1
Current Momentum Scenario Diversion Projections



	1999	2000	2001	2002	2003	2004	2005
■ Recycling	667	687	707	727	747	767	787
□ Organics	393	403	421	434	460	488	503
□ Bulky Recycling	100	116	119	122	125	128	131
□ HSW	6	7	7	8	9	9	10

A diversion rate of 110kg/composter/year is used for all estimates in this document. This rate is lower than current estimates of about 160kg/composter/year, which result in an estimated 182,000 tonnes/year diverted through backyard composting in Ontario. This value is considered too high. The "write-down of backyard composting tonnes" from the previous estimate of 182,000 tonnes/year to 112,000 tonnes/year is shown in year 1999. Diversion of 10,000 tonnes of additional organic waste in year 2000 is assumed to occur through program improvements and the addition of 70,000 SF households to curbside organics programs.

The year 2005 recovery target is based on the assumption that the existing organics diversion system will continue to evolve over the next five years with some level of innovation but in a minority of communities. The assumed roll-out schedule for this scenario is presented in Table 3-2. Generally, this scenario assumes limited growth in curbside separation systems for SF households and partial provision of mixed waste processing services to some City of Toronto MF units, based on the planned construction of the Canada Composting Inc. (CCI) anaerobic digestion facility at the Dufferin St. Transfer Station, currently scheduled for completion in mid-2001.

Table 3-2
Assumed Roll-out Schedule for the Current Momentum Scenario

Year	SF HHs	MF HHs	Total HHs
2000	70,000	0	70,000
2001	120,000	40,000	160,000
2002	220,000	40,000	260,000
2003	380,000	112,000	392,000
2004	540,000	112,000	652,000
2005	700,000	112,000	812,000

Key variables for change over the next five years necessary to reach the Scenario 1 recovery target are listed in Table 3-3 with a description of the broad program assumptions underlying the year 2005 recovery target provided below.

- By 2005, 630,000 additional SF households (for a total of 700,000 SF units) will be provided with a comprehensive organics collection system and will achieve an 60% capture rate for an average recovery rate of 300 kg/hh/yr for all households with access to services. This will be an increase of 190kg/household/year over the likely diversion currently achieved by these households, who probably have some type of leaf and yard waste service at this time.
- The remaining 2.4 million SF households in the province - in both large and small communities but excluding the northern areas - will achieve an average recovery rate of 110 kg/hh/yr (or an average capture rate of 22%), through a combination of leaf and yard waste collection and backyard composting.
- Approximately 25% of Toronto MF units (112,000 dwellings) will be served with a mixed waste processing system resulting in an average recovery rate of 265kg/hh/yr of organic waste, representing 100% capture rate of organics through mixed waste processing for these dwellings (additional 30,000 tonnes/year).
- The balance of MF dwellings in this scenario are assumed to divert minimal levels of organics.

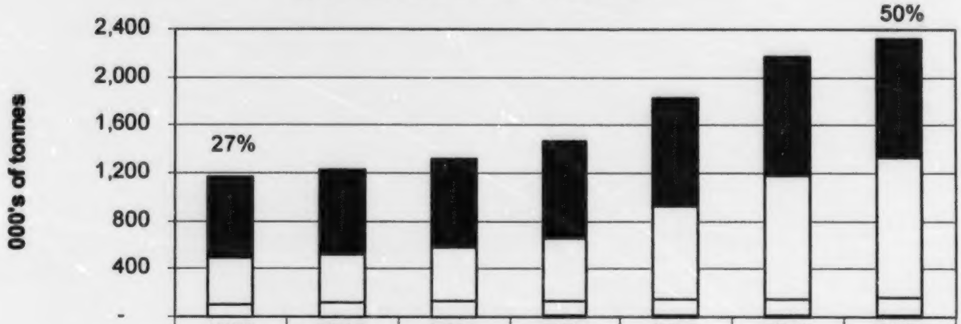
Table 3-3
Current Momentum Scenario Key Variables

Parameter	Tonnes Diverted in 2005
••700,000 SF hh (630k new & 70k existing) with comprehensive curbside organics @ 300kg/hh/yr	210,000
••112,000 MF hh with organics removal through mixed waste processing (635kg/hh/yr processed, 265kg/hh/yr organics removed). 71,120 tonnes of mixed waste processed and 30,000 tonnes of organics recovered.	30,000
••2.4 million SF hh diverting 110kg/hh/year through leaf and yard waste programs and backyard composting	263,000
TOTAL ORGANICS DIVERTED	**503,000**

3.3 Scenario #2 - 50% Diversion by 2005

As shown in Figure 2, the 2005 target for this scenario is 1.168 million tonnes of organics from the SF and MF households. The figure illustrates the annual growth required to get to 50% diversion, and the comparative contribution needed from other material streams. The achievement of the year 2005 target represents 775,000 tonnes more than the 393,000 tonnes actually diverted in 1999.

Figure 2
50% Diversion Scenario Projections



	1999	2000	2001	2002	2003	2004	2005
■ Recycling	667	702	738	810	898	986	1,000
□ Organics	393	403	458	526	779	1,035	1,168
□ Bulky Recycling	100	116	124	132	140	145	151
□ HSW	6	7	7	8	9	9	10

Table 3-4
Assumed Roll-out Schedule for the 50% Diversion Scenario

Year	SF HHs	MF HHs	Total HHs
2000	70,000	0	70,000
2001	220,000	40,000	160,000
2002	500,000	112,000	412,000
2003	1,400,000	250,000	1,250,000
2004	2,200,000	400,000	2,100,000
2005	2,520,000	600,000	3,120,000

The assumed roll-out schedule for the 50% scenario is listed in Table 3-4. The table shows modest increase in capacity development during the next two years with a sharp rise in households served starting in 2003. The number of MF units served would increase to 600,000 dwellings, which is 50% of the projected year 2005 MF household stock. The schedule also reflects the need to install capacity to process organic waste which requires a minimum 2-3 year lead time and without which the strategy can not be implemented.

A year 2005 1.168 million tonne recovery target would require a considerable increase in recovery rates compared to existing levels. As shown in Table 3-5, average household recovery rates would need to increase to a level that compares with rates currently achieved by top performing programs.

Table 3-5
50% Diversion Scenario Key Variables

Parameter	Tonnes Diverted in 2005
••1,770,000 SF hh with comprehensive curbside organics @ 400kg/hh/yr	708,000
••750,000 SF hh with comprehensive curbside organics @ 300kg/hh/yr	225,000
••680,000 SF hh @ 110 kh/hh/yr from leaf and yard waste + BYC	75,000
••600,000 MF hh with organics removal through mixed waste processing (635kg/hh/yr processed, 265kg/hh/yr organics removed); 381,000 tonnes of mixed waste processed and 160,000 tonnes of organics recovered.	160,000
TOTAL ORGANICS DIVERTED	**1,168,000**

If these levels of performance were to be achieved, province-wide bag limits and user fees would be needed, in addition to regionally appropriate landfill bans on organics.

Key program assumptions underpinning the year 2005 50% recovery target are described below.

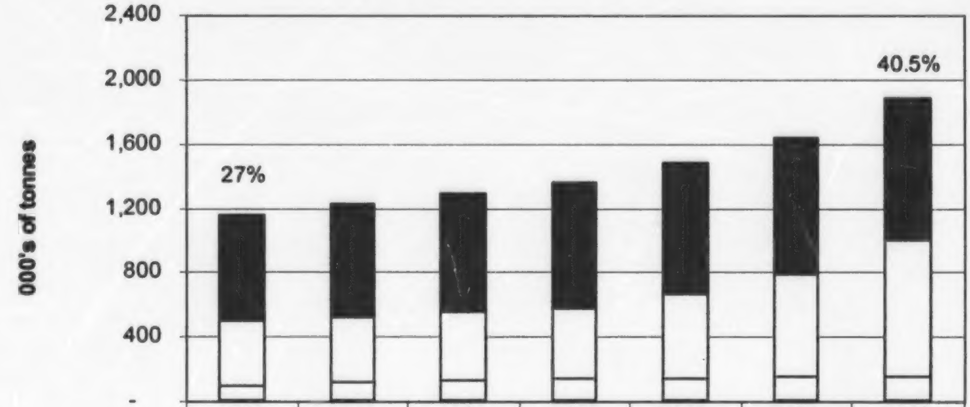
- Approximately 1.77 million SF households would need to achieve an average capture rate of 80% for all organics generated for an average recovery rate of 400 kg/hh/yr
- It was assumed that 750,000 SF households would achieve an overall lower diversion rate of a 300 kg/hh/yr.

- It was assumed that all Toronto MF households (about 450,000) and 150,000 MF units from other large municipalities (GTA, Ottawa, Hamilton, Waterloo) would be provided with a level of service that could capture 100% of all organics generated for an average recovery rate of 265 kg/hh/yr for each participating household.
- The majority of the remaining MF households in the province were assumed to divert no organics.

3.4 Scenario #3 - Middle Ground Diversion Scenario

The Middle Ground Scenario (named to reflect the fact that it is between the 50% and current momentum scenarios) is considered very aggressive, but achievable as long as the appropriate supports are in place. As shown in Figure 3, the year 2005 diversion target for this scenario is 845,000 tonnes. This level of performance represents 452,000 tonnes more than the 393,000 tonne recovery figure used for 1999.

Figure 3
Middle Ground Scenario Diversion Projections



	1999	2000	2001	2002	2003	2004	2005
■ Recycling	667	702	738	773	809	844	880
☐ Organics	393	403	423	444	524	638	845
☐ Bulky Recycling	100	116	124	132	140	145	151
☐ HSW	6	7	7	8	9	9	10

The 845,000 tonne recovery target requires an expansion of service to MF households (along with improved recovery rates) and an increase in SF recovery rates to a range that is now achieved by top performing programs across the province. It also anticipates aggressive implementation of an intensive 2 or 3-stream system and an increase in the number of use pay programs in the province. The assumed roll-out schedule for this scenario is listed in Table 3-6.

Table 3-6
Assumed Roll-out Schedule for the Middle Ground Scenario

Year	SF HHs	MF HHs	Total HHs
2000	70,000	0	70,000
2001	120,000	40,000	160,000
2002	220,000	40,000	260,000
2003	700,000	112,000	812,000
2004	1,300,000	200,000	1,500,000
2005	2,000,000	275,000	2,275,000

Key variables for the Middle Ground scenario are listed in Table 3-7 with a description of the important program assumptions underpinning the year 2005 recovery target provided below.

- ☐ Three levels of SF recovery rates are assumed. A limited number of households (i.e. approximately 400,000 hhs) will capture 80% of organics generated for an average recovery rate of 400 kg/hh/yr for each participating household (160,000 tonnes).
- ☐ Approximately 1.6 million SF households will achieve a 60% average capture rate for an average recovery rate of 300 kg/hh/yr for each participating household (480,000 tonnes).
- ☐ Approximately 1.2 million SF households will achieve a 22% capture rate for an average recovery rate of 110 kg/hh/yr for each participating household (133,000 tonnes).
- ☐ 275,000 MF households would have mixed waste processing (73,000 tonnes). This could be accomplished in Toronto, or by Toronto and one or more other GTA municipalities

Table 3-7
Middle Ground Diversion Scenario Key Variables

Parameter	Tonnes Diverted in 2005
••400,000 SF hh with comprehensive curbside organics @ 400kg/hh/yr	160,000
••1,600,000 SF hh with comprehensive curbside organics @ 300kg/hh/yr	480,000
••1.2 million SF hh diverting 110kg/hh/year through leaf and yard waste programs and backyard composting	133,000
••275,000 MF hh with organics removal through mixed waste processing (635kg/hh/yr processed, 265kg/hh/yr organics removed), 175,000 tonnes/year garbage processed, 73,000 tonnes organics recovered	73,000
TOTAL ORGANICS DIVERTED	**845,000**

4.0 RESIDENTIAL ORGANICS DIVERSION FROM SINGLE FAMILY HOMES

There are a number of challenges to implementing curbside organics recovery programs throughout Ontario which need to be taken into consideration when developing a comprehensive roll-out strategy. Some of these are discussed briefly below.

- **Public Acceptance (Inconvenience, etc.) and Behaviour Change**

The Ontario public has adopted recycling as a way of life, and it is estimated that most Ontario residents recycle on a regular basis.

Backyard composting was added to the recycling program in Ontario as the first step in tackling organics diversion. Many years of experience running backyard composting programs has shown that about 30% of Ontario householders are willing to backyard compost. This is significantly less than the number willing to recycle. Reasons for this include the convenience of recycling and the fact that no "nuisance impacts" (e.g. odours, carrying organics to the backyard composter in winter, etc.) are involved.

To achieve the diversion contemplated in this strategy, virtually all Ontario residents would need to become involved in source separation and storage of organics in the home. This is a significant behaviour change over what currently is required from residents, and many programs have had growing pains trying to get residents to participate in organics diversion programs.

Collection schedules may allow weekly collection of organics (in some cases, it may be bi-weekly). This will likely result in some odour complaints, particularly in summer. Experience from communities who have successfully implemented organics source separation programs (Guelph, St. Thomas, Town of Essex, Caledon, Halifax and other Nova Scotia communities) will need to be carefully evaluated to identify the success factors in launching comprehensive organics programs.

- **Higher Cost**

For many municipalities, the cost of the organics program may require a budget increase, both for start-up funds, and on-going operating costs. Financial assistance from the Province and other industry sources is essential to help offset resistance to moving to a higher cost system.

- **Education**

Some of the above points can be addressed through design of a comprehensive education package explaining the benefits of organic waste diversion. A comprehensive education program will be required in each case when the organics system is initially rolled out, and on-going education is needed to make sure that residents understand source separation requirements, collection schedules, etc.

- **Political Will**

Municipal politicians will find it difficult to support a move to comprehensive organics diversion programs if they cost more than current management practices, and also if they inconvenience householders (and therefore lead to complaints to municipal councillors). A system of explaining the reasons for moving to comprehensive organics programs needs to be developed, along with education programs to councilors who have to defend the decisions when made. Municipal members of the OTG have commented that provincial legislation and regulations make life easier in some ways for councillors to explain to the public why changes that inconvenience them are required.

- **Enforcement and Incentives**

Some residents will be reluctant to participate in comprehensive organics separation programs unless some enforcement or incentive-based mechanisms are implemented at the same time. User pay programs for garbage are likely to provide householders with an incentive to separate as much organic waste as possible from the waste stream. Bag limits also serve a similar purpose, by encouraging people to put more organic waste into the correct stream and out of the garbage stream. Enforcement mechanisms such as not picking up improperly source separated waste are also effective, but likely require some type of transparent container or bag for inspection. Disposal bans on organics (possibly enforceable at the curb) would also encourage source separation.

- **Role of Service Provider**

The collection service provider is the first line of communication between the waste management system and the residential waste generator. Comprehensive source separation programs require more involvement on the part of the service provider. Leaving a note to alert households to the fact that waste was improperly source separated is an effective method to educate the public. Higher levels of staff training will be required to meet the needs of this expanded role.

5.0 ROLE AND POTENTIAL CONTRIBUTION OF BACKYARD COMPOSTING

An estimated 1.1 million backyard composting units have been distributed in the Province of Ontario. To this time, it has been estimated that these composters divert an estimated 182,000 tonnes/year of organic waste.

Estimates of the diversion per composter used by municipalities in Ontario vary from 200kg/unit/year used by Toronto, to 120-160 kg/unit/year used by Peel. Recent studies indicate that these estimates are overly optimistic, and that 110kg/composter/year is a more accurate number.

The 110 kg/composter value will be used by WDO for estimates from year 2000 forward, until a firmer number can be established through research. Therefore, from year 2000, the existing 1.1 million backyard composters will be assumed to divert 112,000 tonnes/year, rather than the 180,000 tonnes per year previously assumed. This "write-down" of 68,000 tonnes presents an even larger challenge to meet the targets set by the WDO process.

The initial estimates of the amount of diversion required to reach 50% assume that an estimated 310,000 tonnes of organic material (total) could be diverted through backyard composting. This was originally an additional 130,000 tonnes in addition to the 182,000 tonnes assumed to be currently diverted. Based on the new, lower recovery rate, current composters divert an estimated 112,000 tonnes/year. On the basis that each composter could realistically divert 110kg/unit/year, an additional 2 million units could potentially need to be distributed to bring the total to 310,000 tonnes.

It is assumed that even with comprehensive curbside service, some householders who have become used to the habit of backyard composting (about 30% of single family homes in Ontario), and will continue to divert some organic waste (particularly leaf and yard waste and vegetable scraps) through the backyard composter, but will also use the curbside system for foods not suitable for backyard composting (cooked foods and meats, etc.), and also during winter, when it is less convenient to backyard compost. The impacts of these various backyard composting factors are considered in the average per household recovery estimates presented in Section 3.

It has also been assumed that backyard composting will continue to play an important role in Northern Ontario and also rural areas where comprehensive curbside organic systems are unlikely to be implemented.

The OTG have provided $30,100 to a number of research studies (Waterloo, Woodstock, Augusta, Peel) in Round One and $6,800 in Round 2 to assess the long term behaviour with respect to backyard composting, and also measure the kg per composter diverted.

6.0 DIVERSION OF RESIDENTIAL ORGANIC WASTE FROM MULTI-FAMILY HOUSING

The OTG generally feels that source separation of organics may not be feasible at multi-family households, particularly in existing buildings that have not been custom designed to accommodate source separation at the household level. Therefore if the organic waste stream from existing multi-family buildings is to be diverted, mixed waste processing of all garbage from multi-family households is required (without source separation) to recover or stabilize the organic component. Preliminary estimates show that this is a very high cost option, but is required to meet the 50% diversion target.

New multi-family buildings could incorporate design features (such as separate chutes) which could more readily accommodate the source separation of organic waste, but the effects of this design change would not significantly impact on organic waste diversion for some time.

Mixed waste processing of apartment waste probably only makes sense in some parts of the province (e.g. GTA, Ottawa, Hamilton, Waterloo) which have high concentrations of multi-family housing. On this basis, scenarios developed by the OTG did not consider this option beyond these four areas. The maximum recovery potential from these four areas is about 200,000 tonnes of residential organics if all multi-family waste is processed.

The costs need to be assessed in more detail to determine if this approach has a place in any of the strategies. More data will be available when tests currently being carried out at SUBBOR (Guelph), and information on the CCI facility at Dufferin Street Transfer Station in Toronto is available.

In Round 1, the OTG allocated $35,000 to City of Toronto to test the performance of the Canada Composting Inc (CCI) mixed waste facility to divert organic waste from multi-family housing at the Dufferin Transfer Station site. Unfortunately, construction delays mean the plant construction will not be completed until summer, 2001. This schedule will not permit testing before March, 2001, therefore this information will not be available for the OTG work.

The OTG allocated $15,000 to Quinte Waste Solutions in Round 1 to test source separation of organics from multi-family households, and $22,500 to Region of Ottawa Carleton to test mixed waste processing at the Conporec Facility in Round 2.

7.0 NORTHERN ONTARIO AND RURAL AREAS

There are a few urban communities in the North where comprehensive curbside organics programs could be considered, and might be economically competitive with other systems. These include Thunder Bay, Sault St Marie, Sudbury, North Bay and Timmins. It is not considered likely that other smaller communities in Northern Ontario would consider comprehensive organics systems at this time. The municipal representative from Northern Ontario on the OTG has stressed the need to focus on recycling and HSW in the North in the short term, and deal with organics at a future time. Diversion of organic waste is not a high priority for Northern Ontario communities, and the OTG feels that systems should be fully proven in the south, before significant implementation should be considered in the North.

Comprehensive organics collection systems are probably not viable for rural areas in Ontario at this time, because of the lack of processing capacity, and the likely high costs of the systems. Rural residents are likely to use backyard composters and divert residential organics effectively through this approach, as the practice of composting is well established in rural and agricultural areas.

The OTG generally assumed that no comprehensive organics programs would proceed in the North or in rural areas before year 2005, except in the case of the 50% diversion scenario, when tonnage from northern single family households is required to meet the target. Backyard composting is considered a suitable residential organics diversion approach for both Northern and rural areas, and it has a strong role to play in these areas.

Some Northern communities are currently assessing strategies to increase the diversion of waste from disposal as part of more comprehensive planning exercises. The OTG has provided some support to encourage the assessment of organics options as part of these strategies.

The OTG allocated $10,000 to Sault St Marie and the Tri-Neighbours in Round One to address organics in the Waste Management Plan being initiated by the City of Sault St Marie. The City of Sudbury received $75,000 in Round 2 to partially fund the construction of compost pads at existing landfills.

A total of $31,800 was allocated to rural communities in Rounds 1 and 2 (Amprior, Village of Rosseau in Seguin Twp, Dufferin County) to assess both backyard composting and source separated organics collection.

8.0 COMPOST MARKETS

The three strategies discussed in Section 3 would result in potentially significant amounts of compost being produced by processing of organic waste which is currently disposed. The additional amounts of finished compost that would enter the marketplace are estimated to be 50,000 tonnes/year for the Current Momentum scenario, 380,000 tonnes/year for the 50% Diversion scenario and 200,000 tonnes/year for Middle Ground scenario. Market development for compost products is critical to the success of any organics diversion strategy, to ensure that the product can be put to its highest and best use, and that stable and high revenues can be secured from the sale of the end product.

An assessment of Canadian compost markets carried out by OCETA[1] in 1996 indicated that about 700,000 tonnes (1.6 million cu yds) is produced annually in Canada. By far the largest market for compost is as a soil amendment used by landscape contractors. Of the total:

- a large amount of compost (1 million cu yds) is sold directly to landscape contractors, either as a blended product in topsoil or as a pure compost.
- a smaller amount of compost (200,000 cu yds) is sold to consumers through garden centres and retailers. These products are often a blend of compost with other materials such as composted bark, peat moss and topsoil, to create a soil conditioner.
- the remaining 400,000 cu yds is either used by municipalities in municipal landscaping programs, as landfill cover, given away each year by municipalities to consumers or other compost users, or sold at very low prices. This product is typically a pure compost, of varying quality, sold in bulk.

Compost is also used for mine rehabilitation and site remediation purposes. Compost is price competitive with peat moss, and knowledgeable users will substitute a certain amount of compost for topsoil and peat moss in certain applications. Agriculture is not a large user of compost, but there is great potential to increase the use of compost by this sector, although the value will remain low.

Organizations such as AQIC in Quebec are a good example of an industry organization that supports the growth of compost markets. The association represents members that produce and market compost (minimum 10,000 tonnes/year) and is a strong supporter of compost standards what will improve market growth.

Research is required to identify the capacity of the existing market to absorb the increased amounts of compost which would be produced by the 5-year strategy chosen, and also the revenue impacts of an increasing supply of compost. Market development strategies which could strengthen the existing market (e.g. some US states require compost in road construction projects for slope stabilization, etc.), and barriers to expanding the existing markets need to be identified.

A number of issues related to compost standards also need to be addressed.

The OTG support the recommendation proposed by the Composting Council of Canada that the Ontario Ministry of the Environment adopt the Canadian Council of Ministers of the Environment's (CCME) *Guidelines for Compost Quality*, as established and agreed upon by all provincial and territorial ministries of the environment, in concert with national and regional representatives of the composting industry. These guidelines focus on four criteria for product safety & quality; specifically, maturity, foreign matter, trace elements and pathogens. Adoption of *CCME's Guidelines for Compost Quality* would replace Ontario's *Interim Guidelines for the Production & Use of Aerobic Compost*, as established in 1991. Adoption of these guidelines would enable the Ontario compost industry to operate in harmony with other Canadian jurisdictions thereby maximizing efficiencies and market potential while ensuring adherence to important product safety and quality parameters.

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[1] *Markets for Compost*, Ontario Centre for Environmental Technology Advancement, 1996

Recognizing the importance of compost markets, the OTG approved $97,810 in funding to a number of compost markets studies and assessments in Rounds 1 and 2.

Projects funded include:

- *$10,800 to City of Orillia to test compost bagging and also the use of compost in new subdivisions;*
- *$6,010 to City of Guelph to test glass grinding technology to eliminate glass shards in compost and increase the market value;*
- *$6,000 to Region of Waterloo to interview 100 farmers to promote organics landspreading;*
- *$22,500 to Region of Ottawa Carleton to test compost performance in three different applications (Vegetable Field Applications, Greenhouses and Golf Courses), and $52,500 to the Composting Council of Canada to evaluate current regulations and standards for compost marketing, and to develop networks of producers and users to market compost.*

9.0 PRELIMINARY ESTIMATE OF CAPITAL COSTS TO CREATE COMPREHENSIVE ORGANICS INFRASTRUCTURE IN ONTARIO

This section outlines the range of capital costs potentially involved in developing a comprehensive residential organics diversion infrastructure in Ontario. It should be noted that the infrastructure for some IC&I organics is already well developed in some parts of the Province through a system of landspreading, rendering and other technologies (e.g. Thermotech, etc.) in addition to composting facilities. Should a comprehensive residential organics strategy be pursued, cooperation with IC&I systems would considerably reduce the start-up costs of the system, and make the overall system more cost competitive.

Capital costs for the organics infrastructure required to implement the 5-Year Strategy would fall into the following categories:

- central processing facilities for leaf and yard waste, source separated organics (e.g. leaf and yard, food and some paper products) and mixed waste processing facilities;
- collection equipment such as trucks and bins etc
- backyard composters

•• Central Processing Facilities

Table 9.1 presents the estimated capital costs of central composting and mixed waste composting facilities required for the three scenarios outlined in Section 3. For the purpose of developing these estimates, it was assumed that new processing capacity would be required to meet all processing needs. The distribution, capacity and type of existing facilities (i.e. can they process food wastes) will be identified through a project funded in Round 2 and being carried out by The Association of Municipal Recycling Coordinators (AMRC). Information from this study can be used to refine estimates at a future time.

As discussed in Section 6, the OTG feels that the only realistic targets for mixed waste processing facilities to address multi-family waste would be four large urban centres where large volumes of multi-family waste are available (GTA, Kitchener/Waterloo, Hamilton and Ottawa). London, Ontario could also be considered as a fifth location. The number of plants required will depend on the scenario adopted for the 5-year strategy. There are two mixed waste processing plants in operation in Ontario at this time (SUBBOR, Guelph and CCI, Newmarket). A second CCI facility will come on stream in Toronto in mid-2001.

Land purchase costs are not included in Table 9.1, as the location of the various plants is not known at this time. In some partnership arrangements, municipalities may provide the land at no direct cost.

- **Collection Equipment**

Municipalities generally test whether bags or bins work best in their local area for organics collection. For communities that decide to use carts, they will probably elect to purchase trucks with automated arms for bin collection. The initial capital costs associated with bins (typically $90/unit) are a significant additional cost to the new system, and have a number of benefits including less strain on collection workers (because of the automated arm).

Communities who use bags for organics collection will likely continue to use trucks that are similar to their current fleet. Assuming that in each scenario, 50% of Ontario municipalities will choose each system, different costs would be incurred.

Collection trucks for various waste streams are replaced on average every eight years. The costs of collection trucks have increased in the last few years, to a point where a new truck can cost $50,000 more per unit than the truck that formerly was used.

Table 9.1 presents the estimated costs of truck replacement, assuming an incremental cost of $50,000 per truck above the normal replacement cost currently included in the collection contract. Because multi-family waste would continue to be collected by conventional garbage trucks, no additional cost is assumed for this activity

- **Capital Costs of Backyard Composters**

As discussed in Section 5, the role of backyard composting in the 5-year strategy is not clear at this time. It is generally felt that backyard composting is a very cost effective approach to diversion of organics in rural and northern areas.

At one stage early in the process, a comprehensive backyard composting strategy to divert 200,000 tonnes/year was contemplated. This approach was not pursued when it was determined that the diversion targets required could not be met by backyard composting alone, and that comprehensive curbside collection would be essential to achieve the recovery figures needed. At one stage, an estimated 2 million backyard composting units would be purchased, at a capital cost of $60 million. This is not now considered likely, based on the analysis in Section 3. At most, an additional 500,000 backyard composters may be purchased, at a capital cost of $15 million.

Table 9.1
Estimated Capital Costs of Three Scenarios (excluding land purchase costs)

Item	Scenario 1 Current Momentum	Scenario 2 50% Diversion	Scenario 3 Moderate Growth
Additional Tonnes by 2005 (rounded)	100,000t	770,000t	450,000t
Single Family	70,000t/y	600,000t/y	370,000t/y
New Single Family Units with Comp Orgs	630,000	2,450,000	1,930,000
Trucks required	90[2]	350	280
MF Organics & HH	30,000t 112,000 MF hh	170,000 t 600,000 MF hh	73,000t 275,000 MF hh
Central Processing (Source Separated)	70,000t/yr $28 million	600,000t/yr 12 plants @ 50k t/y[3] $240 million	390,000 t/y 8 plants @ 50k t/y $160 million
Mixed Waste Processing	71,000 t/yr $35 million[4]	380,000t/y $ 190 million	200,000t/y $90 million
New Processing Capital Costs (Estimated)	$63 million	$430 million	$250 million
Bin Costs (50% of SF)	$27 million	$110 million	$86 million
Incremental Truck Costs	$4.5 million	$17.5 million	$14 million
TOTAL	**$95 MILLION**	**$558 MILLION**	**$350 MILLION**

10.0 SYSTEM COST ESTIMATES

To date, most organic waste diversion in Ontario has been achieved through either backyard composters or leaf and yard waste collection. A few programs provide comprehensive curbside service. The cost of the existing organics management system in Ontario, which diverts an estimated 281,000 tonnes to central composting, and an additional 112,000 tonnes through backyard composting, has been estimated at $25 million/year. This cost estimate was developed in a study commissioned by the Programs Committee, and funded through contributions from the Optimization, HSW and Organics Task Groups.

The costs of the three scenarios presented in Section 3 have been estimated assuming the existing system cost of $25 million/year, and that new organic tonnes will be added to the system at the following costs, as listed in Table 10-1.

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[2] Assuming each truck serves 7,500 hh, with 10% spare

[3] Based on estimate of $18-$20 million for 50,000 t/y plant, obtained from OTG members

[4] Based on 25% higher cost than source separated handling same tonnage

Table 10-1
Estimated Organics Diversion and Garbage Management System Costs

Parameter	Assumed Cost/Tonne
•• Source separated organics (collection plus processing)	$140/tonne
•• Mixed waste processing of MF waste (collection plus processing)	$30/tonne collection plus $85/tonne for all garbage collected from MF units involved
•• Existing leaf and yard waste collection programs	$80/tonne
•• Garbage collection and disposal for single family homes	$100/tonne
•• Garbage collection and disposal for multi-family homes	$85/tonne
•• Backyard composting	$27/tonne[5]

Figures 4 through 6 summarize cost projections for each of the diversion scenarios described earlier. Cost projections for each scenario are presented for the period 2000 to 2005. Each figure shows the estimated cost of the organics diversion system, and also the cost of disposal of unrecovered organics as garbage, to show how the costs change with higher recovery scenarios. Table 10-2 summarizes total projected expenditures to manage organic diversion programs over this period for each scenario.

Table 10-2
Summary of Organics Diversion Program Expenditures

Annual Expenditure	Current Momentum	50% Diversion	Middle Ground
2000	$27,800,000	$27,800,000	$27,800,000
2001	$32,300,000	$38,100,000	$32,600,000
2002	$35,500,000	$54,700,000	$36,900,000
2003	$44,900,000	$105,000,000	$57,400,000
2004	$50,700,000	$152,700,000	$83,700,000
2005	$55,600,000	$179,400,000	$118,500,000
6 Year Expenditure	**$246,800,000**	**$557,700,000**	**$356,900,000**

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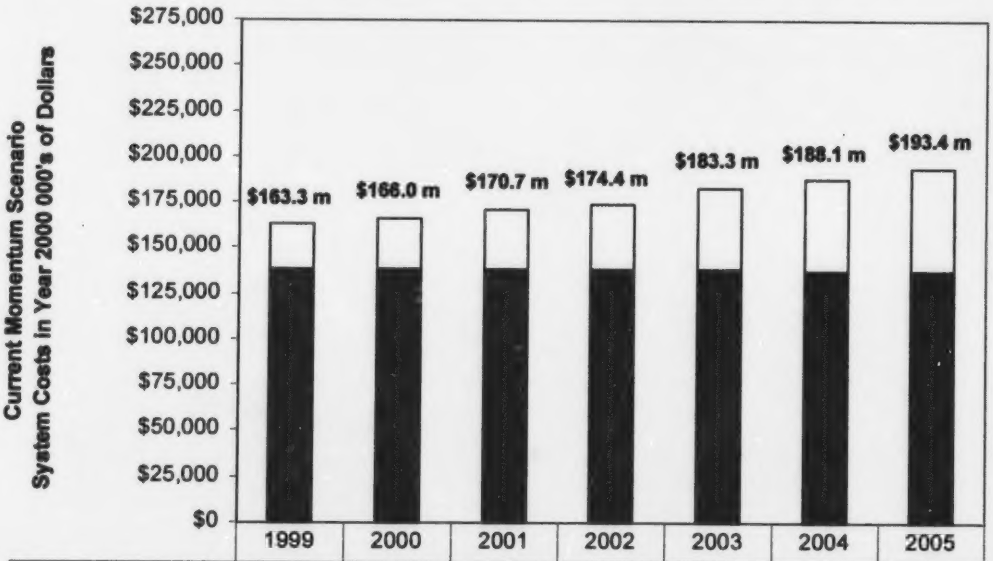
[5] $25 million cost of the existing organics system was allocated to 281,000 tonnes of leaf and yard waste at $80/tonne and 112,000 tonnes through backyard composters at $27/tonne. These rates were used for projections to remain in line with existing costs

Figure 4 shows the projected costs for the Current Momentum Scenario, including the costs of disposing of organic waste not collected in the diversion system. This is essential to capture the cost savings in disposal for high diversion systems. A summary of key points presented below:

- By the year 2005, the annual cost of organics diversion is estimated to be $56 million, approximately two times greater than the year 2000 estimate. This is because 630,000 new SF households will move from leaf and yard waste collection @ $80/tonne to comprehensive curbside organics @ $140/tonne
- The annual cost of organic waste disposal from SF and MF sources is projected to remain about the same as year 2000 expenditures.
- Total annual diversion and disposal expenditures are projected to increase 18%, from $163 million in 2000 to $193 million in 2005.
- As a percentage of the total system, expenditures on organics diversion programs are projected to increase from 15% in 2000 to 29% in 2005.
- Total expenditures (in year 2000 dollars) on organics diversion programs for the period 2000-2005 are projected to be $247 million.

Figure 4
Current Momentum Scenario Cost of Organics Diversion (000's of dollars)

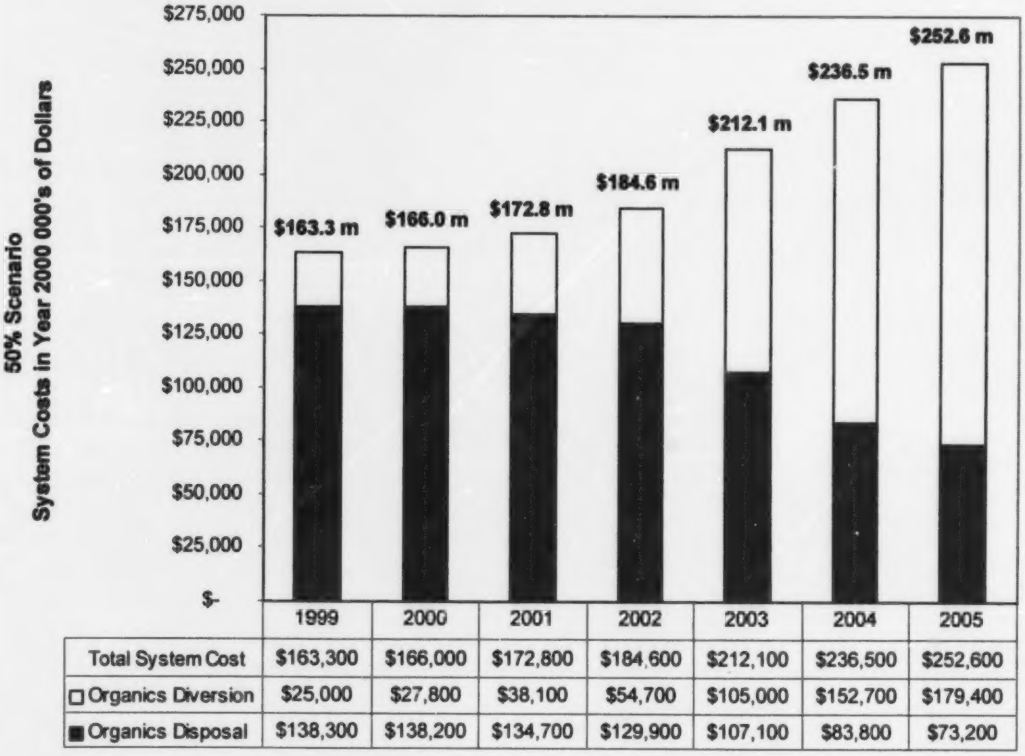


	1999	2000	2001	2002	2003	2004	2005
Total System Cost	$163,300	$166,000	$170,700	$174,400	$183,300	$188,100	$193,400
□ Organics Diversion	$25,000	$27,800	$32,300	$35,500	$44,900	$50,700	$55,600
■ Organics Disposal	$138,300	$138,200	$138,400	$138,900	$138,400	$137,400	$137,800

Figure 5 shows the projected costs for the 50% Diversion Scenario with key points summarized below:

- By 2005, annual expenditures on organics diversion programs are projected to total $178 million, a 7-fold increase compared to 2000 projections.
- The cost of handling diverted and disposed organic waste is projected to total $253 million in 2005, a 55% increase compared to year 2000.
- Between 2000 and 2005, the annual cost of residential organic waste disposal is projected to decline considerably, by 47% to $73 million in 2005.
- As a percentage of total system costs, expenditures on organics diversion programs are projected to increase from 15% in 2000 to 71% in 2005.
- Total expenditures on organics diversion programs for the period 2000-2005 are projected to be $558 million, approximately 2.2 times greater than that projected for the Current Momentum scenario.

Figure 5
50% Scenario Cost of Organics Diversion (000's of dollars)

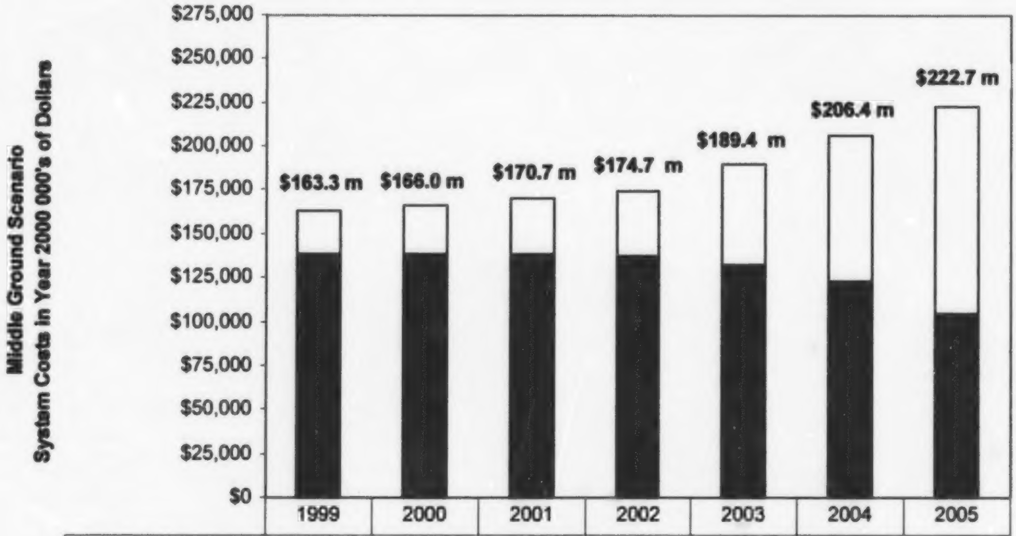


	1999	2000	2001	2002	2003	2004	2005
Total System Cost	$163,300	$166,000	$172,800	$184,600	$212,100	$236,500	$252,600
☐ Organics Diversion	$25,000	$27,800	$38,100	$54,700	$105,000	$152,700	$179,400
■ Organics Disposal	$138,300	$138,200	$134,700	$129,900	$107,100	$83,800	$73,200

Figure 6 shows the projected costs for the Middle Ground scenario with key points:

- The annual cost of organics diversion programs is estimated to $118 million in 2005, a 5-fold increase compared to 2000 estimates.
- The total cost of handling both diverted and disposed organic waste is projected to total $223 million in 2005, a 36% increase compared to year 2000.
- Between 2000 and 2005, the annual cost of residential organic waste disposal is projected to decline 25% to $104 million in 2005.
- As a percentage of the total system, expenditures on organics diversion programs are projected to increase from 15% in 2000 to 53% in 2005.
- Total expenditures on organics diversion programs for the period 2000-2005 are projected to be $357 million, approximately 1.5 times greater than that projected for the Current Momentum scenario.

Figure 6
Middle Ground Scenario Cost of Organics Diversion (000's of dollars)



	1999	2000	2001	2002	2003	2004	2005
Total System Cost	$163,300	$166,000	$170,700	$174,700	$189,400	$206,400	$222,700
☐ Organics Diversion	$25,000	$27,800	$32,600	$36,900	$57,400	$83,700	$118,500
■ Organics Disposal	$138,300	$138,200	$138,100	$137,800	$132,000	$122,700	$104,200

11.0 COMMENTS ON GUIDING PRINCIPLES

The Organics Task Group was asked to comment on the Guiding Principles developed by the Funding and Regulations Committee at their April 19th, 2000 meeting. This section summarizes the input provided, and stresses the areas where the general guiding principles are not applicable to organics and how they could address the organics issue and challenges.

The Organics Task Group identified the following general points, which apply to all principles discussed:

- Consumer responsibility must be part of the organics diversion equation;
- Industry is difficult to identify for a funding formula for organics;
- Municipalities need a strong incentive to divert organics, particularly where this is more expensive than landfill;
- The principle of reduction is not as relevant to organics as to recyclables and HSW.

In general, the OTG felt that reference to industry is considered more of a challenge for organics than recyclables or HSW, as some of the organic waste stream (particularly leaves, grass and garden waste) does not have a specific brand owner or industry to which it is attributable. The discussion addressed whether growers, distributors, grocery stores and food producers should be included in the industry, and how to deal with imported foods.

Comments on specific principles are presented below.

Principle 1: A long-term, sustainable funding mechanism shall be structured to provide incentives for municipalities and industry to improve the environmental effectiveness and economic efficiency of waste diversion programs within the overall waste management system.

The OTG felt that the first sentence regarding municipalities should read...municipalities should have an incentive to optimize their programs. The remainder of the sentence is not considered relevant to organics.

In general, it was agreed that municipalities need a strong incentive to divert organics, and that if landfill tipping fees are low, diversion of organics will not be cost efficient compared to landfilling, unless the funding formula provides incentives which overcome this barrier.

Principle 2: A long-term, sustainable funding mechanism shall encourage increased diversion of materials, towards the goal of 50% diversion from disposal, in a manner which is environmentally appropriate, cost effective and socially acceptable to each municipality.

The OTG would prefer that the wording "socially acceptable" be replaced with "socially responsible". There is a concern that some organic processing facilities may not be considered socially acceptable, but are socially responsible.

The wording should stress that 50% is an overall average, and that some communities will divert more, some less. Some concern was expressed that when municipalities reach 50%, they will not go beyond this target unless strong incentives are provided.

It was suggested that regional targets could be set to reflect regional conditions.

Any funding formula must recognize local circumstances, and that diversion of organics may not be economically viable or environmentally desirable in some locations. It was suggested that more emphasis should be put on broader environmental impacts of organics diversion.

The sustainable funding formula for organics needs to include operating costs.

Consumer responsibility should be included as a principle.

Principle 3: Financial responsibility for municipal waste diversion programs shall be shared among consumers, government and industry.

The Organics Task Group again wanted to stress the challenge of identifying the industry for organics.

Some OTG members wanted clarification that the service provider should not be considered an industry in this context.

The OTG agreed that the consumer is part of the equation and should be included.

Principle 4: Municipalities and industry are each responsible for the design and implementation of programs to meet their responsibilities, including financial arrangements.

The Organics Task Group would prefer the following wording..municipalities and industry are together responsible, rather than *each* responsible.

The wording for municipalities is considered reasonable, but should be clearer, to explain what is expected from municipalities with respect to record keeping for organics.

The wording for industry is addressed in Section 12.

Principle 5: The Province of Ontario is responsible for putting in place sufficient enforcement mechanisms, which may include regulation, to meet the goals and objectives of the WDO in a timely manner, to minimize free riders and to provide a level playing field for companies competing within industry sectors. These mechanisms must recognize the diversity of municipalities and industries in Ontario and allow for maximum flexibility in the design and implementation of the programs required to meet the objectives of the WDO. These mechanisms must not disadvantage Ontario industries.

The Province of Ontario is responsible for putting in place sufficient enforcement mechanisms to ensure action on the part of municipalities and industry, and to provide a clear, predictable framework for WDO program planning and implementation.

The wording of this principle was different when originally discussed by the OTG.

12.0 POLICIES REQUIRED TO IMPLEMENT ORGANICS STRATEGY

Policy options to address the increased diversion of organics were discussed at length at three meetings of the Organics Task Group (June 5th and 27th and July 25th). Six policy options were considered as presented in Table 12.1

Table 12-1
Policy Options To Implement Organics Diversion Strategy

Policy Option	Description
#1 **Status Quo, Market Rules**	Let residential organics collection develop through market forces only, i.e. only those municipalities where it makes economic sense would move forward. Impacts of this policy reflected in Current Momentum Scenario presented in Section 3.
#2 **Provide Initial Financial Support**	Provide an Artificial Incentive to "Prime the Pump" to get organics going. The Province of Ontario could provide grants to get organics programs off the ground. Capital grants to cover part or all of the capital costs involved, plus operating grants to offset the increased operating costs of organics programs. This approach was used for recycling
#3 **Regulatory Drivers to Ban Organics From Landfill**	Regulatory Drivers Keep Organics Out of Landfill Similar to landfill bans on leaf and yard waste currently in operation in the US and Canada; landfill bans on all organics in Nova Scotia, and the fully phased-in EU Landfill Directive. Mechanisms could include municipal landfill ban and provincial legislation.
#4 **Mandate Prescriptive Level of Organics Collection Service**	Regulations could be implemented which require a particular level of service, and prescribe curbside organics collection. Existing Ontario legislation mandates collection of recyclables and half the service level for garbage, and also mandates convenient leaf and yard waste collection for communities > 50k population (curbside not prescribed).
#5 **Market Development and Market Pull**	The Province of Ontario could put procurement specs in place which require compost from residential organics programs to be used in construction projects (e.g. slope rehabilitation in new road construction); a price preference could be specified.
#6 **Financial Incentives**	Financial incentives such as surcharges on loads of leaf and yard waste and other organic material to encourage increased diversion. Diversion credits to incent municipalities to divert more organics.

The first conclusion from the discussion is that some type of regulation was considered essential to achieve 50% diversion. If the Province wants to achieve 50% diversion, it is not considered realistic to let the market decide on the level of organics diversion to be achieved. The 50% diversion target can not be achieved by 2005 if the "cheapest way" is chosen, and this is what happens when the market rules. Legislative supports are therefore essential to increase the recovery of residential organic waste substantially, and IC&I organic waste could or should be regulated as well.

A policy of mandatory service levels for organics collection was not considered favourable by some OTG members from the municipal sector. However, at the July 25, 2000 meeting, a resolution supporting this approach was adopted.

The strong preference of the group among the six policies presented was to implement a strategy of landfill bans coupled with market development policies to create a demand for the end product from organic collection and processing programs. Landfill bans on organics are seen as a necessary element of a strategy to divert significant quantities of organic material from disposal. Private sector companies who own and operate landfills have expressed serious concerns about the enforceability of landfill bans. They feel that enforcement will be difficult and needs to occur at the curb. This complicates and slows down the collection process, thereby increasing collection costs. Municipal OTG members also expressed some concerns about landfill bans, and felt that landfill surcharges on loads with organic material would provide an economic incentive to divert more.

Implementing a ban on leaf and yard waste across particular regions of Ontario is considered an appropriate first step in a comprehensive organics ban from landfill. This can be extended to cover additional organic materials in the future. Both of these policies have been implemented elsewhere, and Ontario can observe the level of success with these approaches. A comprehensive ban on leaf and yard waste has been implemented in a number of US states, and has resulted in a substantial increase in the number of composting sites throughout the country, and the amount of organic waste diverted from landfill.

The initial ban on leaf and yard waste could be extended at a future time to cover all organic waste. Again, this policy has been implemented elsewhere, therefore there is experience to draw on in this regard. A comprehensive ban on all organic waste from landfill is in place in Nova Scotia, and will be slowly phased in, in Europe, through implementation of the EU Landfill Directive over the next 7-10 years.

A ban on leaf and yard waste may not work in Northern Ontario, and will not work at unsupervised landfills, but these accept a small percentage of the total waste handled, and therefore non-compliance will not have a significant impact on the amounts of waste diverted.

Policies such as surcharges on leaf and yard waste (e.g. Orillia charges double tipping fee for leaf and yard waste) could also be considered and might work equally well to divert organic waste from disposal. These approaches offer financial incentives rather than legislation.

Some US states do not offer recycling grants unless user pay systems are in place. This option could be considered by the Province of Ontario if any granting is to be carried out by the province in the future.

At the July 25th OTG meeting, members agreed that user pay is a good incentive to force the behaviour change needed to recover organics, but mandatory user pay imposed by the Province as a condition of funding is not supported. In fact, representatives from GTA municipalities expressed concern about user pay as part of the strategy, stating that it may be a considerable amount of time before it will be accepted in some municipalities.

13.0 FUNDING FORMULAS AND INCENTIVES REQUIRED

The mandate of the WDO is to develop a long-term sustainable funding formula to reach the 50% diversion target. Increasing the diversion of residential organic waste plays a significant role in reaching this target.

It is acknowledged that organics are different to the other materials being addressed by the Programs Committee (recyclables and household special waste).

About 34% of the organic waste stream is leaf and yard waste, for which a brandowner is not readily identifiable. The possibility of obtaining funding from seed and fertilizer companies for the grass and yard waste portion of this waste stream was discussed by the OTG and was dismissed as being unreasonable and unworkable.

An additional 50% of the organics stream is food waste, which would be difficult to identify by specific brandowner. Different approaches were discussed by the OTG, including a levy on all food products. This was supported by the majority of OTG members, and was passed as a resolution at the July 25, 2000 meeting.

It is considered important to assign some consumer responsibility for food waste in the garbage stream, to make consumers aware of the choices which increase the amount of food waste in the garbage. User pay systems are one mechanism which would be effective in this regard, as manufacturers or brandowners have limited ability to influence waste quantities in the food portion of the organic waste stream.

The remaining 16% of the organics waste stream is household and sanitary papers, for which brandowners can be identified.

Therefore, given the apparent lack of a brandowner responsibility for funding the full organics recovery system, most of the costs will need to be split between the province, municipalities, and consumers.

The funding formula to be considered needs to have two components:

- Start-up funding to put the systems in place, and
- On-going operating funding to solve any cash flow problems at the municipal level.

For an organics funding formula, it is acknowledged that *one size fits all* does not work, and the formula must take local circumstances into account.

There is a concern that the $59 million estimated "incremental cost" is based on tip fees, and that municipalities may loose a lot of revenues as a result of organics diversion strategies. Tipping fees do not reflect true costs, particularly for municipalities who own their own landfills. These revenue losses must be taken into account.

The financing strategy will need to look at what it would take to motivate stakeholders to participate, and motivate industry to support the IC&I composting infrastructure. This will lead to more economies of scale, particularly if both IC&I organic waste generators and municipalities can share processing facilities.

There are limitations to the approach of tying the funding formula to the cost of disposal because this fluctuates, therefore a strategy is required to deal with this also, but was not discussed by OTG at length, as it was considered essential to get commitment from the Province of financial support before any details were worked out.

Some type of incentive based funding formula is likely to have the highest chance of success. If the Province wants a 50% diversion target, then municipalities want the Province to assist with start-up costs for organics systems, and also on-going operating costs, if these are greater than handling the material as garbage. Because disposal costs vary over time, the funding formula would need to be revisited as the cost of disposal varies. Incentives should also be given to the private sector to divert more organic waste as part of the strategy.

Diversion credit systems could also be considered, to provide incentives to reach higher diversion targets.

If every tonne over a base level receives a financial return, on a sliding scale of kg/capita to landfill, and each municipality is assured that they can get more dollars as more organic waste is diverted, this would provide municipalities with the base of funding and financial security required to move the organic diversion issue forward. In some cases, the funding formula should be left to the individual municipality to negotiate their individual situation with the Province.

Carbon credits, which may be available if carbon trading becomes a reality in Ontario and elsewhere, may also help to offset some of the costs of the system.

14.0 SCHEDULE

The schedules required to meet the three scenarios considered in this work are presented in Section 3.

The roll-out strategy for the Middle Ground Scenario, which is the scenario considered achievable within the 5-year timeframe, is considered very ambitious, and a significant challenge, because of the substantial change required to collection systems, and the need to educate the public on the behaviour changes required.

The roll-out strategy will depend to some extent on timing of contract renewals, and incentives provided to municipalities by the WDO in the future. Members of the Organics Task Group indicated that existing contracts run anywhere from one to five years into the future.

At least one to two years of planning is required to implement an organics system. If a Certificate of Approval is required for a new composting facility, and siting of the facility has not started, a one to two year timeframe may be required. The new Permit by Rule regulations currently under consideration by the Ministry of Environment should shorten the time required for a Certificate of Approval significantly, but are not in place at this time.

Siting of composting facilities remains a challenge, therefore the strategy should focus on maximizing the use of existing facilities where possible. The location, available capacity and ability to take residential food waste must be identified for all Ontario facilities through a WDO funded research project awarded to AMRC.

Multi-family organics programs can only be implemented when mixed waste composting capacity is constructed in large urban areas of the Province. Assuming that these plants would require 24 months for design, siting, approvals and commissioning, the earliest that these could realistically be operating would be in year 2003. The economics of this approach, which is very high on a per tonne basis, need careful consideration.

15.0 ROUND 1 AND 2 PROJECTS APPROVED FOR FUNDING BY ORGANICS TASK GROUP

Table 15.1 presents a list of the projects funded by the Organics Task Group in Rounds 1 and 2 of WDO Funding.

Table 15.1
Organic Projects Funded by WDO Rounds 1 and 2

Round 1

Project #	Municipality/Organization	Project Name	WDO Funding
ORG-R1-01	City of Peterborough	Compost facility siting study	$ 15,000
ORG-R1-02	Township of Augusta	BYC Composting Study (Task 2)	$ 2,700
ORG-R1-03	City of Toronto	Multi-family waste facility	$ 35,000
ORG-R1-04	Region of Peel	BYC sales in schools	$ 10,000
ORG-R1-05	Dufferin County	Impacts of user pay on organics collection	$ 25,000
ORG-R1-06	AMRC	Workshop Proceedings	$ 5,000
ORG-R1-07a	City of Orillia	Compost Markets Development	$ 5,800
ORG-R1-07b	City of Orillia	Compost Packaging	$ 5,000
ORG-R1-08	City of Guelph	Glass grinding technology	$ 6,010
ORG-R1-09	Quinte Waste Solutions	Multi-family organics source separation	$ 13,000
ORG-R1-10	City of Sault Ste. Marie	Waste Management Master Plan	$ 10,000
0RG-R1-11	City of Woodstock	Backyard Composting Study	$ 12,900
0RG-R1-12a	Region of Waterloo	92/93 Backyard Composting Survey Update	$ 4,500
ORG-R1-12b	Region of Waterloo	Compost Markets	$ 6,000
ORG-R1-13	Regional Municipality of Niagara	Co-collection Study	$ 50,000

Round 2

ORG-R2-01	AMRC	Policies and Legislative Options to Optimize Residential Organics Diversion	$6,000
ORG-R2-02	AMRC	Organics Processing: Current Capacity and Options	$11,500
ORG-R2-03	Amprior	Backyard Compost Useage Survey	$2,600
ORG-R2-04	Composting Council	Rules and Networks	$52,500
ORG-R2-05	Composting Council	Composting Awareness Week	$30,000
ORG-R2-06	Halton	Solid Waste Management Strategy	$10,000
OPT/ORG-R2 01	Markham / Toronto	Automated Cart-Based Collection System for Organics, Garbage and Recyclables	$60,000
OPT/ORG-R2 02	Markham / Guelph	Baseline Sampling of Material Densities	$4,650
ORG-R2-07	Orillia	Phase Two Expanded Organics Collection	$11,500
ORG-R2-08	Ottawa	Apartment Mixed Waste Processing Pilot (test Conporec's facility)	$22,500
ORG-R2-09	Ottawa	Market Development for L&YW Compost in Field Application for Production of Fruits & Veg.	$7,500
ORG-R2-10	Ottawa	Market Development for L&YW Compost in Greenhouse & Nursery Production	$7,500
ORG-R2-11	Ottawa	Market Development for L&YW Compost on Golf Courses	$7,500
ORG-R2-12	OWMA	Organic Waste Symposium	$2,500
ORG-R2-13	City of Peterborough	Exploration of Options for Organics Collection	$15,000
ORG-R2-14	Quinte Waste	Residential Depot Organics Collection Project	$15,000
ORG-R2-15	Sequin Township	Curbside Collection of Kitchen Organics Demonstration	$4,200
ORG-R2-16	Simcoe	Seasonal and Urban-Rural Organic Waste Composition & Survey	$4,020
OPT/ORG-R2-03	Sudbury	Construction of L&YW Composting Pads	$75,000
ORG-R2-18	Toronto	Overcoming commercial barriers to development of organic material diversion facilities	$30,000
ORG-R2-19	Victoria	Expanded leaf and yard waste composting program	$10,000
ORG-R2-20	Waterloo	Composting emissions study	$20,000
ORG-R2-21	York	Plastic Film Extraction from a Processed Municipal Organic Residual Stream	$75,000

Table 15 1

Organic Projects Funded by WDO Rounds 1 and 2

Round 1

[illegible]	[illegible]	[illegible]	WDO Funding
[illegible]	City of Peterborough	Compost facility siting study	$ 15,000
[illegible]	Township of [illegible]	BYC Composting Study (Task 2)	$ 2,700
[illegible]	City of Toronto	Multi-family Waste Study	$ 35,000
[illegible]	Region of Peel	BYC sales in schools	$ [illegible]
[illegible]	[illegible] County	Impacts of user pay on organics collection	$ 25,000
[illegible]	AMRC	Workshop Proceedings	$ 6,000
[illegible]	City of [illegible]	Compost Markets Development	$ 5,400
[illegible]	City of [illegible]	Compost Packaging	$ 5,000
[illegible]	City of [illegible]	Leaves grinding technology	$ 6,310
[illegible]	[illegible]	Multi-family organics source separation	$ [illegible]
[illegible]	City of [illegible]	Waste Management Master Plan	$ [illegible]
[illegible]	City of [illegible]	Backyard Composting Study	$ 12,500
[illegible]	Region of Waterloo	RMW Backyard Composting Survey Update	$ 4,500
[illegible]	Region of Waterloo	Compost Markets	$ 6,000
[illegible]	Regional Municipality of Niagara	Co-collection Study	$ 50,000
		Total Funding ORG Round 1	**$ 190,910**

Round 2

[illegible]	AMRC	Policies and Legislative Options to Optimize Residential Organics Diversion	$6,000
[illegible]	AMRC	Organics Processing: Current Capacity and Options	$11,500
[illegible]	[illegible]	Backyard Compost Usage Survey	[illegible]
[illegible]	[illegible]	Rules and Networks	[illegible]
[illegible]	[illegible]	Composting Awareness Week	[illegible]
[illegible]	[illegible]	Food Waste Management Strategy	$10,000
[illegible]	Markham [illegible]	Automated Cart Based Collection System for Organics, Garbage and Recyclables	$50,000
[illegible]	Markham [illegible]	Baseline Sampling of Material Deliveries	$4,[illegible]
[illegible]	[illegible]	Phase Two Expanded Organics Collection	$11,[illegible]
[illegible]	Ottawa	Apartment Mixed Waste Processing Pilot and Compost Quality	$22,500
[illegible]	Ottawa	Market Development for L&YW Compost in Field Application for Production of Fruits & Veg.	$2,500
[illegible]	Ottawa	Market Development for L&YW Compost in Greenhouse & Nursery Production	$7,500
[illegible]	Ottawa	Market Development for L&YW Compost on Golf Courses	$7,500
[illegible]	OWMA	Organic Waste Symposium	$2,500
[illegible]	City of Peterborough	Exploration of Options for Organics Collection	$15,000
[illegible]	Quinte Waste	Residential Depot Organics Collection Project	$15,000
[illegible]	Seguin Township	Curbside Collection of Kitchen Organics Demonstration	$4,200
[illegible]	Simcoe	Seasonal and Urban-Rural Organic Waste Composition Analysis	$4,020
[illegible]	Sudbury	Construction of L&YW Composting Pads	$75,000
[illegible]	Toronto	Overcoming commercial barriers to development of organic material diversion facilities	$30,000
[illegible]	[illegible]	Expanded leaf and yard waste composting program	$10,000
[illegible]	Waterloo	Composting emissions study	$20,000
[illegible]	York	Plastic Film Extraction from a Processed Municipal Organic Residual Stream	$75,000
		Total Funding ORG Round 2	**$474,470**
		Total Funding ORG Rounds 1 & 2	**$665,380**

16.0 CONCLUSIONS AND RECOMMENDATIONS

The Organic Task Group concluded that to reach a 50% diversion target, the following systems would need to be implemented:

- a comprehensive curbside[6] residential organic waste diversion program[7] to service all urban single-family households in Ontario[8], and
- waste from about half of the multi-family households in the Province must be processed through mixed waste processing plants.

A five year time frame is not considered realistic to achieve this target, for a number of reasons including timing of contracts, the need for siting, approval and construction of new processing facilities, etc. This strategy would also need considerable legislative and financial support.

A scenario which diverts about 845,000 tonnes of organics per year (compared to current levels of 393,000 tonnes) is considered aggressive, but achievable within the five year timeframe, as long as the appropriate legislative and financial supports (discussed elsewhere) are in place.

The Organics Task Group identified numerous areas of research which are required to refine the preliminary estimates presented in the five year strategy, and address issues which could not be fully answered at this time. Some of the key questions which will require on-going research, and should form the workplan of any future WDO include the following:

Compost Markets: If a comprehensive organics diversion strategy is rolled out in the Province of Ontario, significant additional amounts of finished compost will be available on the marketplace. It is essential to secure markets for this material to sustain the composting industry and therefore the long-term financial viability of any organics strategy. Issues which will need to be addressed on an on-going basis will include market development strategies through approaches such as government procurement practices, research into alternative uses and markets for finished compost, development of compost product quality standards and assessment of market capacity, and price sensitivity on a region by region basis.

Processing Infrastructure Development: There is not sufficient processing capacity in the Province of Ontario at this time to process the amount of organic waste which would be recovered through the various strategies considered. One of the challenges to any strategy will be to develop the processing infrastructure (both aerobic composting and anaerobic digestion) through construction of processing capacity throughout the Province.

Technical Barriers To Compost Processing: A number of technical barriers to enhanced organics diversion, including issues such as removal of plastic from finished compost, and also effective bag breaking equipment to remove plastic from incoming organics streams need to be resolved to improve the quality of finished compost and therefore secure market outlets and increase revenues.

Collection Challenges: Cost effective and efficient collection of residential organics is one of the keys to successful implementation of programs throughout the Province. Each community needs to identify the system that meets their own needs, while learning from the experience gained in other communities. WDO should continue to support pilot collection programs as the first step in comprehensive system implementation. On-going research should continue to identify cost efficient and publicly acceptable ways of collecting residential organic materials for diversion.

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[6] Curbside collection is the only approach which will reach the high recovery levels per household required to recover the tonnage necessary to reach the 50% target.

[7] to include household food waste, as well as leaf and yard waste

[8] in communities of 5,000 population or greater

Public Behaviour Change: Diversion of organics is more complex than diversion of dry recyclables from the public perspective. The material involved is wet, and can become odorous if not handled properly. Many communities have found significant resistance to the behaviour change required to source separate organics, and properly set them out at the curb. On-going research is required into the mechanisms required to get people to change their behaviour and fully participate in the organics collection system, and actions which can be taken at the system design stage to facilitate this behaviour.

Policies Required to Enhance Diversion of Organics: It was concluded by WDO committees that a number of policies were required to ensure participation in the organics system to the level required to achieve significant diversion values. Policies such as landfill bans, bag limits, user pay and regulated mandatory service levels were all considered in preparation of this report. On-going research is required into the impacts of each of these policies on the amount of organics diverted.

Multi-Family Organics: The WDO Organics Task Group recognizes the difficulty of source-separating organic materials from multi-family waste, particularly in older buildings where space is not available and the waste management system is not designed to handle source separated streams. For this reason, the strategy has been developed assuming that mixed waste processing is the only viable approach to diverting organic waste from multi-family buildings. Cost estimates carried out to develop the 5-year strategy indicate that this is a very high cost approach to diverting organic waste. The WDO has funded research to test source separation of multi-family waste and also to assess the technical and economic viability of mixed waste processing of multi-family waste to recover organics, but a number of questions remain unanswered at this time. Significant additional research is required to identify ways to address organic waste from multi-family households.

Backyard Composting: On-going research is required to identify the appropriate role of backyard composting in a comprehensive organics diversion strategy, including reasonable estimates of the actual costs of running backyard composting programs, the diversion results which can realistically be achieved by backyard composting in the long term, appropriate supports required to sustain backyard composting programs in the long term (levels of promotion and education, and technical support, etc.), and the impacts of various policies (bag limits, user fees, etc.) on the costs of backyard composting and on the levels of diversion achieved.

Residential Organics System Costs: The cost estimates developed in the Five Year Strategy presented in Section 10 of this document are based on very preliminary estimates obtained from a number of sources. Significant additional research is required to refine these estimates by collecting more comprehensive data on existing and planned organics programs, and identifying the best available cost projections for future organics programs.

Net Environmental Impacts of Organic Waste Diversion: An integrated approach to identifying the optimal waste management system, community by community, is required to make the best decisions on how organic and other elements of the waste stream are managed in Ontario. This should form one of the on-going efforts of the WDO.

WDO
ONTARIO
WASTE DIVERSION
ORGANIZATION

Programs Committee: Household Special Waste Task Group

Interim Five-Year Plan

To Increase Diversion Of HSW To Contribute To The Provincial 50% Diversion Objective

16 August, 2000

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WDO PROGRAMS COMMITTEE
HOUSEHOLD SPECIAL WASTE (HSW) TASK GROUP
Five Year Plan

Recommendations and Options for HSW Management & Financial Strategies For The Province of Ontario

1.0 INTRODUCTION

The recommendations and options developed in this document were the result of eight daylong task group meetings and three sub-task group meetings. In addition to these meetings, many hours of review and consultation between members of the task group in preparation for the meetings took place.

The strategy developed by the HSW Task Group is presented in this document. They are intended to guide the development of a long-term sustainable funding formula to support Household Special Waste (HSW) Programs in the Province of Ontario.
These guiding principles are developed in accordance with Part IV "C" and "D" of the Memorandum of Understanding (MOU) setting out the goals and objectives of the Ontario Waste Diversion Organization.

The parties to the MOU have confirmed their continued commitment to reduction, reuse, recycling and treatment of residential wastes towards Ontario's goal of 50% waste diversion from landfill. Given that HSW comprises significantly less than 1% of residential solid waste; and that some constituents of HSW cannot be reused, recycled, or collected through residential waste or recycling programs, the focus of their management is to:

- First minimize the generation of such waste
- Second provide for its safe and efficient treatment, and only then
- Ensure environmentally sound management of the remainder, and

Given that a transition period is required to provide adequate time for:

- A suitable definition of HSW to be agreed upon by stakeholders
- Manufacturers to reformulate products where possible
- Elected officials to educate their constituents and to modify current waste management policies and practices
- Manufacturers, municipalities and NGO's to educate consumers/residents to modify their product use and waste management practices
- Development of appropriate infrastructure and programs

The municipal and industry sectors represented in the WDO have agreed that the materials classified as HSW should be managed in a cost efficient and environmentally sound management system. They have agreed:

- The costs of managing these materials should be shared equitably among the responsible parties

- The program will require acceptable backdrop regulation to ensure participation and a level playing field.
- The program requires a schedule of materials classified as HSW through scientific criteria, to be fundable through the WDO program

2.0 HSW GENERATED and RECOVERED IN ONTARIO

The estimated amounts of HSW generated from the municipal residential sector currently disposed are shown in Table 1. These numbers are for planning purposes and require further research through waste compositions to confirm and narrow the ranges.

Data on how much HSW are "in the system" is not available. Estimates have been made on the basis of waste composition studies conducted over the past two decades that report from 0.5 to 1% of MSW to be HSW. It should be further recognized that current data reflects the collection of some materials that are not appropriately categorized as HSW or HHW.

Estimates of recovery by the task group are limited by the data available. Estimates have a range of 10% to 30% with the task group estimating a 20% recovery of HSW "in the system".

TABLE 1: ESTIMATED QUANTITIES OF HSW WASTE BY HOUSEHOLD TYPE IN ONTARIO 1999

	Residential Totals
# HH IN PROVINCE (1)	4,238,000
WASTE GENERATION RATE (t/hhld/yr)	1.003
WASTE GENERATED (tonnes/year)	4,250,714
% HSW of WASTE GENERATED (2)	0.5% to 1%
RANGE HSW GENERATED (tonnes/year)	21,250 to 42,507
RANGE of HSW GENERATION BY HH (kg/hhld/year)	5.014 to 10.03
HSW DIVERTED (3) (Tonnes/year)	6,360
RANGE of HSW DISPOSED (Tonnes/year)	15,050 to 36,307
RANGE of RECOVERY %	15.0% to 29.9%

1) Municipal 3R's In Ontario: 1998 Fact Sheet
2) Waste Compositions (London, Quinte) and Literature Search
3) Municipal 3R's Data call for 1999

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3.0 CAPITAL COSTS

The HSW Task Group has developed and catalogued Ontario HSW Programs and under-serviced areas (Appendix A). The HSW Task Group has also recommended permanent depots for WDO funding in 2000 based on these maps and their most likely fit into a long-term plan.

WDO HSW Depot Funding Approvals – Year 2000

The WDO approved nine new depots in Ontario with a total capital cost of $319,000. The priority for the establishment of depots was locations in under serviced areas of the province. These locations are noted in Appendix A on the attached maps.

Future Capital Needs

The attached maps in Appendix "A" highlight the existing HSW collection infrastructure and proposed new sites. Opportunity exists to integrate new access to HSW collection with the existing infrastructures through lower cost satellite depot sites and/or the establishment of event days. It is evident from the current service maps that additional service is required with potential new depot sites to be identified. The committee did not estimate future capital costs and needs as the timeframe and resources to accomplish this task were limited.

The main issues discussed by the task group were:

- Defining the minimum level of access for HSW collection and possible regulations that ensure the opportunity for HSW collection (e.g. Blue Box programs – populations over 5,000 must provide service for source separation programs)
- Minimizing capital invested considering the long-term vision is to reduce the amounts of HSW collected to those residuals needing care through definition and the **B**uy responsibly, **Use** it up and **D**ispose of what is left responsibly (BUD Communications Program)
- The inclusion of capital funding for new infrastructure in the funding formula

There is recognition by the task group of a specific need to bring municipal HSW Management programs up to a specific level of service through regulation and standards.

The task group through resolution agreed:

- That the province should fund new municipal depots and capital through its infrastructure funding programs
- Capital in current HSW management programs will be funded by WDO through the amortization of capital costs in existing municipal HSW depots and contracted programs (e.g. event days)

4.0 HSW SYSTEM COST ESTIMATES

Assuming a HSW cost of between $920 and $1,600 per tonne from the GTA Region (AMRC 1999 estimates) and a mid-size municipal cost of $2,160 per tonne (AMRC 1999 estimates) the estimated range of costs of the Ontario HSW System have been estimated Table #2.

GTA costs have been weighted at 70% of total system costs to account for the bulk of HSW collection in large urban centres. A preliminary report from the WDO Cost Study of municipal HSW programs was received in early July and is summarized below.

Based on the collection of 6,360 tonnes of HSW in 1999, the cost of all programs reporting or estimated is at $8 million. The average cost per tonne is calculated to be $1,258/tonne.

Summary of WDO Data Call for HSW Management Systems

The preliminary results for the WDO Data Call to estimate the cost of provincial HSW programs have been completed.

It was reported that 50 of the 107 municipalities in the data call reported HSW program costs. An additional 23 reported that they do not offer HSW management programs.

Adding in the cost of HSW programs for the municipalities reporting and for two major programs (Peel and York Regions) that estimated costs, were added in and brought the total estimated cost to $8 million. Additional costs will have to be added to reflect the costs for programs that did not provide data, and for those programs that were not included in the data call.

Cautionary notes indicate that there are some municipal programs that may be added to the costs in the report. The inclusion of capital costs is not clear although six municipalities did report they do not include any capital costs in their reported costs.

The report also indicates that a number of municipalities still do not prescribe full cost accounting to their programs. Numerous reasons for not tracking capital costs were indicated including:

- Other departments track
- Not part of program costs
- No capital costs because the assets were purchased outright at the start of the program
- Grants were used to purchase the assets

The report indicates a reasonable level of confidence in the costs reported by participating municipalities.

Table #2

Ontario HSW System – Cost/Tonnage Estimates

	Total Tonnes Collected Ontario	GTA Urban Centres @ $920/tonne A	Large Urban Centres @ $1,600 tonne B	Other Municipal Centres @ $2,160 tonne C	Range of System Costs Low Range = A+C High Range = B+C
Estimated 1999 Recovery	6,100 tonnes (21% recovery)	$4 M	$7 M	$4 M	$8 to $11 M
10% Annual Growth Rate to 2005	9,800 tonnes (33% recovery)	$6 M	$11 M	$6 M	$13 to $17 M

M – millions

Key Assumptions:
1. HSW generation is 0.71% of total residential waste = 30,000 tonnes.
2. Generation rate assumed to be constant through 2005.
3. GTA municipalities account for 70% of total quantities recovered with the remaining 30% from other communities.
4. Capital costs not included.

5.0 ESTIMATED RECOVERY TO 2005

The tonnage recovered in HSW programs is expected to increase over the next five years due to:

- Funding support for operations and increased access to programs
- Communication and education programs that divert HSW products from landfill and sewage systems.

There is no history the task group can draw on to predict the impacts of the above changes. The task group's best estimates are 10% annual growth to 2005. It is estimated that by 2005 the tonnage collected will be approximately 9,800 tonnes. These estimates are based on the existing mix of residuals collected and are not moderated by the BUD communications program that will be implemented and the definition of HSW materials to be collected.

6.0 POLICIES REQUIRED TO SUPPORT & IMPLEMENT A LONG TERM HSW STRATEGY

This section deals with policies and regulations that may be needed to support the sustainable recovery of HSW from the municipal residential waste stream over the next five years. This also includes policies that support industry participation in the long-term strategy.

Access To HSW Collection

A number of approaches can be taken to provide citizens with access to HSW collection facilities. These are costly but essential programs to ensure the health, safety and environment of citizens and the municipal waste management system.

Policy Approach to Access Options:

i. **Status Quo:** Let HSW residential collection be provided where municipalities decide to establish the service. Currently Household Hazardous Wastes are exempted from generator handling and disposal requirements at the point that they are generated (e.g. in the home) by Regulation 347 under the category Domestic Waste.
ii. **Regulatory Approach**: Provincial regulation requiring a level of service for materials defined as HSW for populations (criteria to be determined). Currently there is no regulation in place.
iii. **Financial Support Approach**: Municipal programs are provided with up front capital to establish HSW programs for a specified list of materials. This could be through number options including infrastructure grants by the province or capital funding through the WDO.

By resolution the HSW Task Group preferred "Option ii - Regulatory Approach" to have some level of responsibility on municipalities to collect HSW with criteria to be developed for access.

Definition of HSW

The definition of HSW (Appendix B) had been started through the IMPPS process and is a list of criteria noted in Schedule A. Schedule "A" criteria are currently being addressed by a Canadian Standards Association (CSA) Task Group. The results of this work will undergo a peer review process and are not expected for 12 to 18 months.

The definition in criteria terms is intended to inform manufacturers and brand-owners whether or not their products are subject to regulation (and provide a legal basis for enforcement).

A companion communication would be used to inform the public and municipal staff on the recognition of program materials (e.g. symbols and information on product labels already required by federal regulations).

Municipalities are service-oriented organizations and require facts from industry on assisting them to refuse non-HSW products and empty packaging from HSW Management programs.

The WDO HSW Task Group formed an industry/municipal sub-task group to propose a schedule of "what's in and what's out" for the initial rollout of the WDO HSW support and communication program based on the interpretation of scientific criteria.

The schedule in Appendix B will become the defined list of materials for management in Ontario HSW Programs. This list will define the HSW communications programs and funding program by industry and municipalities.

The sub-task group as part of these discussions agreed on the following:

- The definition of HSW and ongoing assessment of what's in the program is critical to provide incentives to brand owners to reformulate and move their products into less costly treatment options.
- Empty containers should not be accepted and can be treated through current recycling and disposal systems (e.g. empty aerosols and paint cans can be recycled in the curbside recycling programs).
- An ongoing review process to review the HSW list be implemented and take place annually and at the end of the five year plan.
- The CSA process coupled with the Consumer Chemical Container Regulations (CCCR) bring about labeling changes that simplify identification and disposal of HSW products for municipal staff and consumers.
- The CSA process which deals with scientific criteria result in national standards for HSW that will be adopted by the provinces.
- The HSW definition process also meets the overall objective of reducing what HSW programs safely collect to only those products requiring special care.
- Voluntary industry recovery programs (e.g. rechargeable batteries – Rechargeable Battery Recycling Corporation), which choose to recover their products through their own collection systems, will not be included in this list for funding purposes.

Industry Participation – Level Playing Field

The task group has made it perfectly clear from an industry and municipal perspective that a voluntary program will not work for the majority of industry sectors involved in HSW. All task group members fully support "backdrop regulations" to ensure full and fair participation by all industry players in the HSW system. Listed below are two options that the task group has identified as options.

The regulations would be intended to address all brand-owners who sell or distribute products in Ontario to ensure that they participate in the HSW program, carry financial responsibility, and meet the performance standards in the system.

Example of Two Level Playing Field Regulations

Quebec Paint Regulations

One option that gives manufacturers a choice is demonstrated in the Quebec Paint Regulations (QC 655-2000 Gazette June 14, 2000, Vol. 132, No. 24. This regulation sets clear standards for all manufacturers and marketers of paint in terms of recovery, data, level of service, registration and communications programs. Businesses must file their recovery plans with the government in a specified time and can be subject to fines up to $250,000.

A business can be exempt from the above provisions if it is a member of an approved organization whose function is to recover specified residual materials and has an agreed to plan filed with the government. It is assumed that the choice of belonging to an approved organization that has an agreed upon plan is more efficient for most businesses to support.

Industry Municipal Partners for Product Stewardship (IMPPS) Draft Regulation

Another option tabled by the industry group through the IMPPS process has been previously presented to the task group and is similar to the Quebec regulation. The proposal only regulates what action is required and by whom, but does not regulate how an objective is to be achieved, and guarantees performance by all players in the system.

7.0 FUNDING FORMULAS AND INCENTIVES REQUIRED

Assuming the net cost of HSW programs across the province will be calculated annually and the WDO provides financial support up to 50% of the net cost.

Collecting municipal and industry funding

The HSW principles state each is responsible for the collection of their share of funds.

Collecting Industry's Share

Industry has committed to conduct separate meetings to discuss their options for collecting funds. Some of the options may include charges levied at retail and shown on the register tape, brand owner levy, or one-time fees to build a legacy fund. Industry will report back to the WDO on its deliberations and its decision on HSW.

Currently industry has identified two options that can be described as brand-owner focused, and another that is retail focused.

Cost of Basket of Goods or Cost of Specific Streams

In addition to a collection mechanism some options to collect funds may or may not address differences in costs to deal with various material streams. Two options that have been identified:

- Cost of Basket of Goods for all material categories collected with one fee/levy. This is considered administratively simple to manage but may not provide an incentive for manufacturers of hard to manage products to make changes to their products to lower costs.

- Category specific fees to account for the wide difference in disposal fees between materials. This rewards manufacturers whose products are amenable to low cost treatment options, through a number of strategies including reformulation and consumer education. This option however is administratively complex.

Municipal Share

Municipalities currently pay for the total net cost of the HSW system. Under the HSW principles municipalities have the responsibility for raising their funds and method. The collection of these funds is commonly through the municipal tax base and other municipal revenues such as landfill tip fees. The opportunity for HSW user fees is minimal and has been unsuccessfully applied on the HSW stream in one municipality (Quinte) with a severe drop off in HSW materials collected. The suggested approach would be to have overall MSW programs (i.e. user fees, bylaws, bag limits) in place to encourage diversion from the system, with a reduction for recyclables and HSW. This would discourage dumping and hiding HSW in regular trash.

How to pay out funds

- The municipal funding model should recognize with incentives - best practices that reduce overall long-term system disposal costs through reuse programs, access criteria, collection of targeted materials only, innovative C&E through BUD and other incentives the task group can identify.

How to share costs between municipalities and industry

Based on the WDO principles the costs are to be shared and this may be assumed to be up to 50% WDO funding.

The task group has examined three options:

- Functional Split Model
- Shared Model
- Shared 50/50 Model

After examining the Functional Split and Shared Models, the task group decided to develop the "Shared 50/50 Model". This model incorporates specific industry and municipal concerns:

- Municipalities for funding equity over the longer term as HSW disposal costs are reduced by various reuse and recycling activities in HSW management programs
- Industry for funding a defined list of HSW products and for having a greater degree of input in disposal and program costs.

The following model options were examined:

Functional Split Model:

- All budgets based on previous years costs
- Municipalities would be responsible for funding all collection and administration functions including capital
- Industry responsible for funding all post-collection treatment of residuals
- HSW definition required – what's in what's out has been produced for year 1 of the program and is found in Appendix B

Shared Model:

- All budgets based on previous years costs
- All administration, collection and disposal costs shared equally
- BUD communications program shared 50/50 by all waste streams and based on program size by population
- Capital not included except for new programs and re-engineering for cost reduction
- Performance incentive for municipal reuse and innovative reuse programs
- HSW definition required – what's in what's out has been produced for year 1 of the program and is found in Appendix B

Shared 50/50 Model (preferred task group model):

- All budgets and plans based on previous years costs.
- Budget determines WDO industry funding program, which will be 50% of Total HSW program costs.
- System costs quantified to define and develop respective plans to deal with introducing cost efficiencies,
    - Elements of Collection/Administration, post-collection treatment and disposal broken out and declared. These costs include amortized capital.
    - Municipalities responsible for collection/administration/post collection treatment system – focused on reducing these costs.
    - Industry responsible for disposal costs – focused on reducing these costs.
    - Communication and Education programs shared 50/50
    - Any differential between collection/administration and disposal costs at year-end will be equalized between industry and municipalities. This will be accomplished by dividing this differential equally to achieve a final 50/50 share of total HSW system costs as program collection and disposal costs change and evolve. The main principle is the sharing in costs and benefits as the program evolves
- The most appropriate performance factors need to be determined by the task group
- HSW definition required – what's in what's out has been produced for year 1 of the program and is found in Appendix B

Incentives

The task group due to data restrictions and time limitations agreed that further research was required by the WDO to determine the appropriate incentive(s).

Some incentives that the task group proposed for further research and for all of the above funding models are:

- Costs or cost efficiency
- Public Access and use of programs
- Reduction of collection of non-HSW non-hazardous materials and diversion of them to more appropriate treatment options
- Measured increases in re-use of materials and energy recovery

8.0 PLANNING ISSUES

These activities will be accomplished through the stakeholders to support the establishment of the five-year plan and the financial support program. These are issues that require further study and data to support the five-year plan and the goals and objectives that support the HSW vision:

Immediate short term planning issues to support the financial support program:

- Determine the most appropriate incentives to promote efficiency
- Standard RFP's and best practices for tenders and contracts
- Standard accounting and data information to assist in identifying cost reduction opportunities and to assist in benchmarking activities
- Definition of HSW – Canadian Standards Association (CSA) – Develop interim schedule for Year 1 and a process to assess beyond year 1

Longer term planning issues

- Cost benefit analyses of HSW programs to be conducted during the first five year period
- Review of role of limited level of competition in the waste management industry on disposal costs

9.0 CONCLUSIONS AND RECOMMENDATIONS

The recommendations made in this report will be submitted to the Funding & Regulation and Programs Committees for their consideration and their report to the WDO Board on August 9, 2000.

The final WDO Board report will be submitted to Ministry of Environment on September 1, 2000.

The following lists the final key resolutions endorsed by the task group at its July 24, 2000 meeting to support the establishment of a HSW Management and Funding program.

The following resolutions were endorsed by the HSW Task Group:

1. The Province of Ontario needs to take appropriate action to ensure the viability of HSW Management and Funding Programs by ensuring:

    a) A level playing field is created for all brand owners participating in the HSW System

b) Municipalities collect scheduled HSW materials and products from consumers/citizens (criteria for access to be developed)
c) Revision of regulations governing HSW management to facilitate the above recommendations (to be determined)

2. The HSW Task Group endorses the Shared 50/50 Model for funding municipal HSW Programs. The preferred model will result in an equitable split in HSW program costs and make use of performance criteria to promote efficiency in the recovery of identified HSW products.

3. The HSW Task Group has developed and endorsed a schedule of materials for collection and funding by municipalities and industry in Ontario's HSW programs – Appendix B.

ATTACHMENT A

Ontario HSW Programs By Regions

Maps and Legends With New Depots Proposed

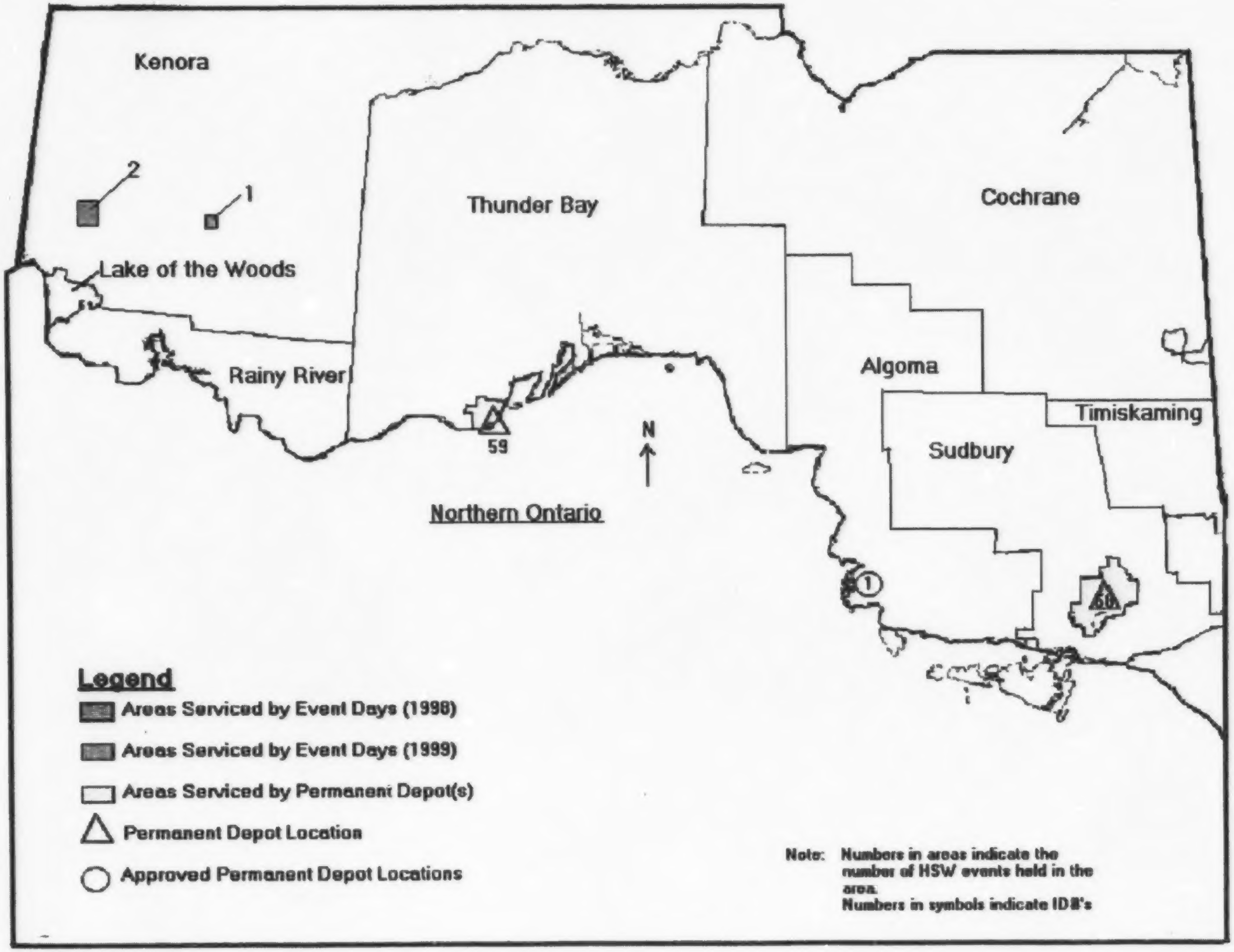
Current HSW Locations By Region

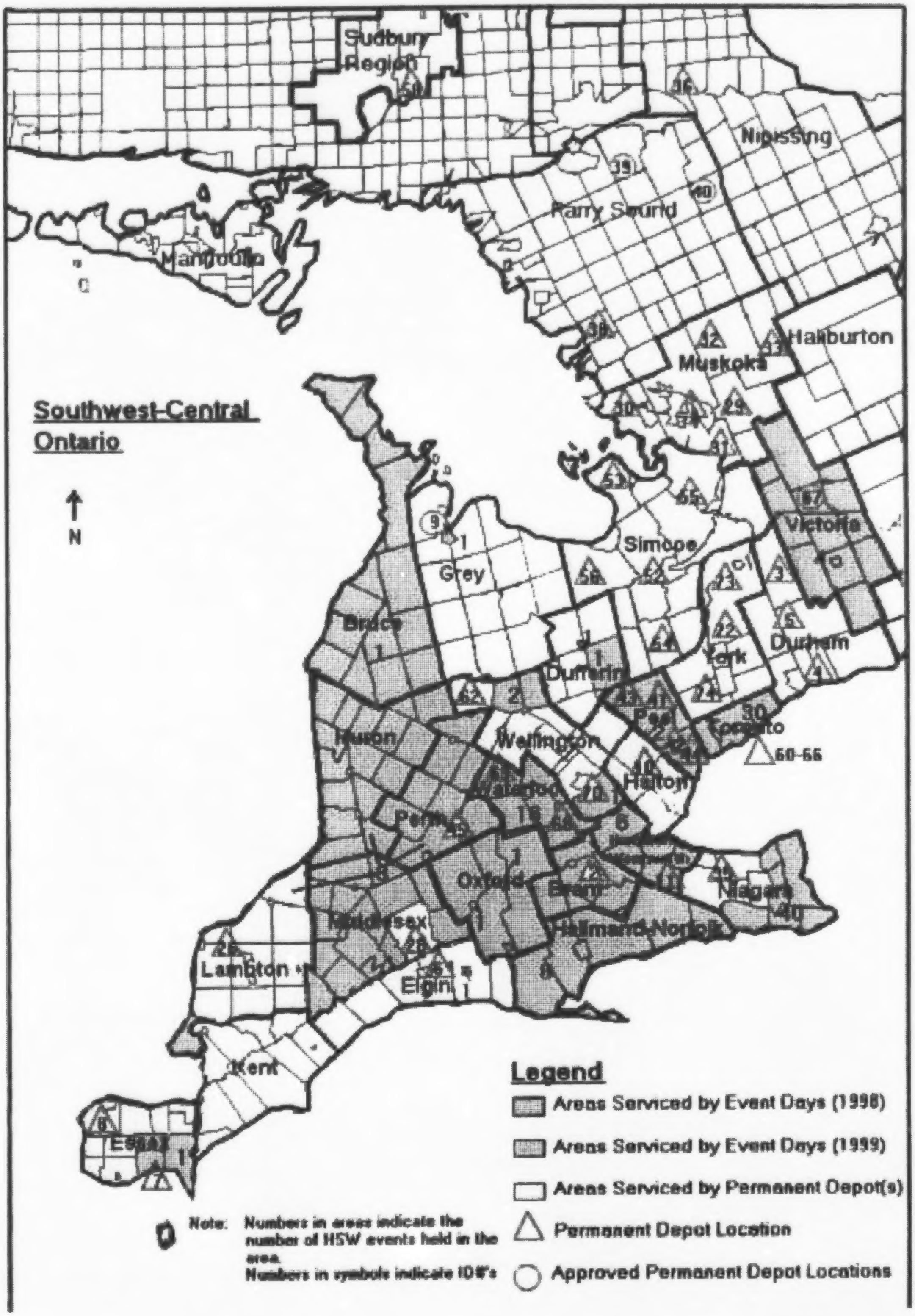
(ID# correspond to the locations marked on attached maps)

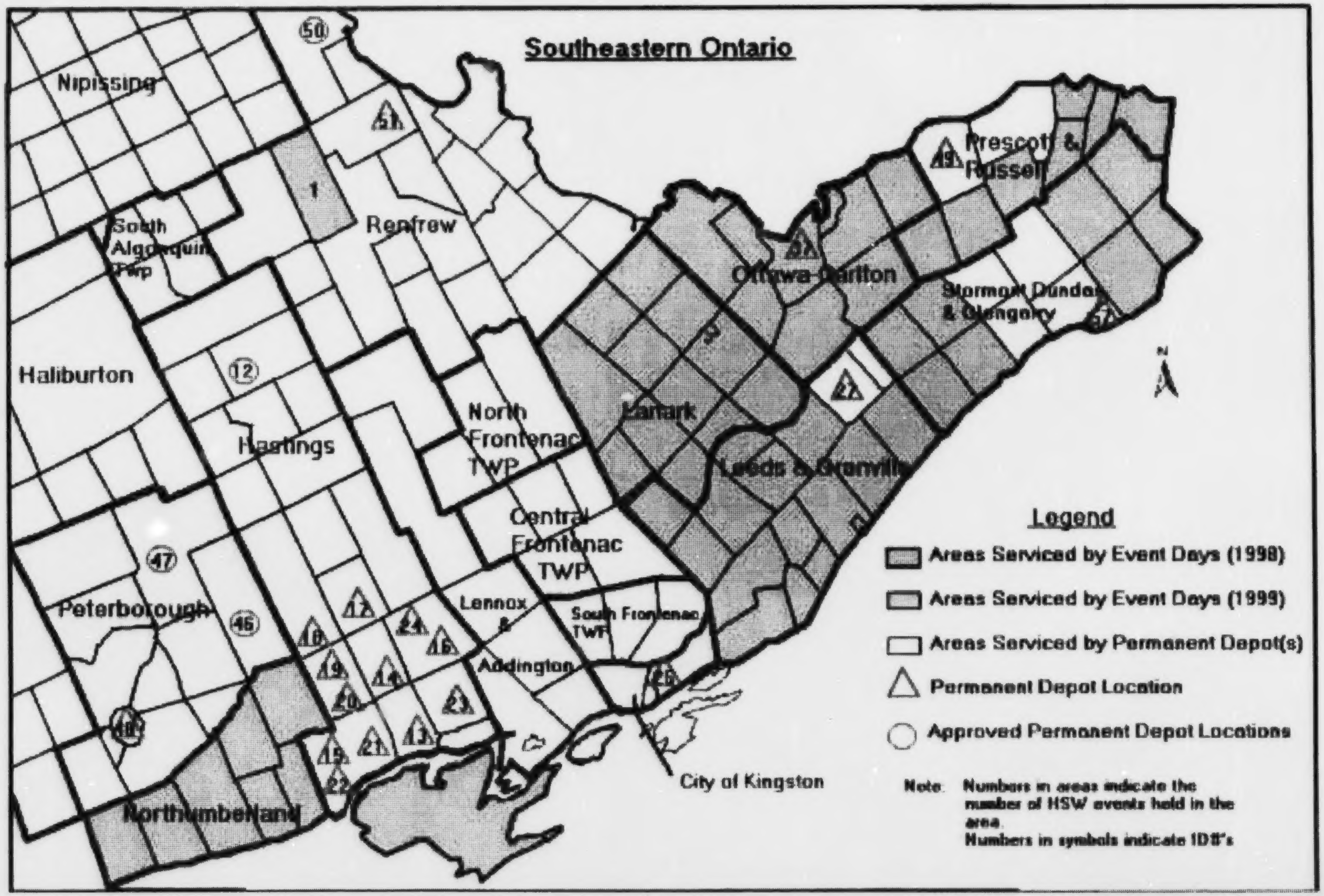
Region	ID	City/Town	Site/Name
Algoma	1	Sault Ste. Marie	Landfill Site
Brant	2	Brantford	Branford Landfill Site
Durham	3	Cannington	Brock Waste Management Facility
	4	Oshawa	Oshawa Waste Management Facility
	5	Port Perry	Scugog Waste Management Facility
Elgin	6	St. Thomas	St. Thomas Transfer Station and HHW Program
Essex	7	Kingsville	Transfer Station #2
	8	Windsor	Household Chemical Collection Center
Grey	9	Owen Sound	Owen Sound Landfill Site
Halton	10	Milton	Halton Waste Management Site
Hamilton-Wentworth	11	Hamilton	Hotz Environmental Services Inc.
Hastings	12	Bancroft	Bancroft Public Works Yard
	13	Bellville	Twp. of Thurlow Landfill Site
	14	Center Hastings	Twp. of Huntingdon Public Works Garage
	15	Frankford	Public Works Yard
	16	Hungerford	Waste Disposal Site
	17	Madoc	Madoc Landfill Site
	18	Marmora	Village of Marmora Municipal Storage Shed
	19	Rawdon	Twp. of Rawdon Landfill site
	20	Sterling	Twp. of Stirling -Rawdon Landfill site
	21	Sydney	Public Works Yard
	22	Trenton	Public Works Yard
	23	Tweed Twp.	Twp. Of Tyendinaga Landfill Site
	24	Tweed, Village of	Public Works Garage
Kingston	25	Kingston	Kingston Recycling Center
Lambton	26	Moore Twp.	4090 Telfer Rd.
Leeds & Grenville	27	North Grenville	Oxford Mills Waste Site
Middlesex	28	London	Green Way P.C.C
Muskoka	29	Bracebridge	Part lot 9 Conc. 3 MacAulay Ward
	30	Georgian Bay Twp.	Lot 27, Conc. 6 Baxter Ward

Region	ID	City/Town	Site/Name
	31	Gravenhurst	Part lots 26, 27 Morrision Ward
	32	Huntsville	Lot 32 Conc. 14, Stevenson Ward
	33	Lake of Bays Twp.	Lot 4, Conc. 8 Franklin Ward
	34	Muskoka Lakes Twp.	Part lots 21,22,23, Conc. 1 Medora Ward
Niagara	35	West Lincoln	Niagara Road 12 Landfill Site
Nipissing	36	North Bay	112 Paton Rd.
Ottawa-Carleton	37	Nepean	Trail Waste Facility
Parry Sound	38	Parry Sound	MacFarlane St. Transfer Station
	39	Powassan	Landfill Site
	40	Sandridge	Landfill Site
Peel	41	Bolton	Bolton Community Recycling Center
	42	Brampton	Brampton Recycling Depot
	43	Caledon	Caledon Public Waste And Recycling Depot
	44	Mississauga	Britannia Public Waste and Recycling Depot
Perth	45	Stratford	Stratford Landfill Site and HHW Depot
Peterborough	46	Havelock-Belmont-Methuen	6th Line landfill
	47	Twp. North Kawartha	Anstruther lake Landfill
	48	Peterborough	Peterborough City/County Household Hazardous Waste Facility
Prescott & Russell	49	Clarence-Rockland	2335 Lalonde Rd.
Renfrew	50	Deep River	Landfill Site
	51	Pembroke	Alice and Fraser Waste Disposal Site
Simcoe	52	Barrie	City of Barrie Operations Center
	53	Clearview Twp.	Nottawasaga Landfill Site
	54	New Tecumseth	New Tecumseth Transfer Station
	55	Orillia	Waste Diversion Site
	56	Twp. Of Tiny	North Simcoe Transfer Station
Stormont Dundas & Glengarry	57	Cornwall	City of Cornwall Household Special Waste Depot
Sudbury	58	Sudbury	Household Hazardous Waste Depot
Thunder Bay	59	Thunder Bay	John Street Landfill Site
Toronto	60	Etobicoke	Disco Transfer Station

Region	ID	City/Town	Site/Name
	61	Maple	Keele Valley Landfill Site
	62	North York	Victoria Park Transfer Station
	63	North York	Bermondsey Transfer Station
	64	North York	Ingram Transfer Station
	65	Scarborough	Scarborough Transfer Station
	66	Toronto	Commissioners Recycling Facility
Victoria	67	Fenelon	Fenelon Landfill
Waterloo	68	Cambridge	Cambridge Landfill
	69	Waterloo	Waterloo Landfill
Wellington	70	Guelph	HHW Depot, Wet-Dry Recycling Center
	71	Harriston	P.M.H.C. Landfill
York	72	East Gwillimbury	95 Bobs Drive
	73	Georgina	23068 Warden Ave.
	74	Markham	555 Miller Ave


Kenora
2
1
Lake of the Woods
Rainy River
Thunder Bay
59
Cochrane
Algoma
Sudbury
Timiskaming
1
60
N
Northern Ontario
Legend
▨ Areas Serviced by Event Days (1998)
▨ Areas Serviced by Event Days (1999)
☐ Areas Serviced by Permanent Depot(s)
△ Permanent Depot Location
○ Approved Permanent Depot Locations
Note: Numbers in areas indicate the number of HSW events held in the area.
Numbers in symbols indicate IDB's


Southwest-Central Ontario
N
Sudbury Region
36
Nipissing
39
40
Parry Sound
Manitoulin
38
42
33
Haliburton
Muskoka
30
29
53
55
67
Victoria
9
1
Grey
Simcoe
56
52
Bruce
1
Dufferin
York
Durham
62
2
Peel
Toronto
60-66
Huron
Wellington
Halton
Waterloo
Perth
Oxford
Brant
Niagara
Middlesex
Haldimand-Norfolk
Lambton
Elgin
Kent
Essex
Legend
Areas Serviced by Event Days (1998)
Areas Serviced by Event Days (1999)
Areas Serviced by Permanent Depot(s)
Permanent Depot Location
Approved Permanent Depot Locations
Note: Numbers in areas indicate the number of HSW events held in the area.
Numbers in symbols indicate ID#'s


Southeastern Ontario
Nipissing
South Algonquin Twp
Renfrew
Haliburton
Hastings
Peterborough
Northumberland
North Frontenac TWP
Central Frontenac TWP
Lennox & Addington
South Frontenac TWP
City of Kingston
Lanark
Ottawa-Carlton
Leeds & Grenville
Prescott & Russell
Stormont Dundas & Glengarry
N
50
51
1
12
47
46
48
17
18
24
16
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3
Legend
▨ Areas Serviced by Event Days (1998)
▨ Areas Serviced by Event Days (1999)
☐ Areas Serviced by Permanent Depot(s)
△ Permanent Depot Location
○ Approved Permanent Depot Locations
Note: Numbers in areas indicate the number of HSW events held in the area.
Numbers in symbols indicate ID#'s

Attachment B

Schedule of HSW Materials Accepted in Ontario Programs

Draft under review by the WDO HSW Sub-Task Group
Main List of Materials Meeting Criteria for HSW Collection Substantially Complete

Schedule of HSW Materials
Accepted in Ontario Programs

HSW Draft Criteria and Sample List of Products/Substances Captured Under the Proposed Criteria

Preamble – Draft Criteria

Proposed criteria (schedule A) were developed as part of the previous discussions undertaken by Industry and Municipalities, and similar criteria are currently under review as part of the Canadian Standards Association (CSA) HHW Definition project. These criteria are based on current scientific knowledge and align with current or proposed criteria under the Federal Consumer Chemicals and Containers Regulations (CCCR), the Federal Controlled Products Regulations (WHMIS) and the Federal Transportation of Dangerous Goods Regulations (TDG). The outcome of current discussions as part of the CSA HHW Definition process could result in changes to these proposed criteria. It is recommended that the Province ensure that the criteria used in any level playing field regulation enacted by the Province eventually align with the CSA HHW Definition. Further, those parties involved in the WDO HSW Task Group recommend that the WDO endorse efforts by the CSA HHW Definition process. It is also recommended that the WDO support consequent work undertaken to develop and implement packaging labels and communications on a Federal level that clearly indicate which products and substances should be managed by Municipal or Industry-led HSW programs.

Sample List – Products/Substances Funded under Proposed HSW Funding Model

This list includes materials which meet currently available scientific criteria for residual materials that require special handling and which are not suitable for inclusion in curbside waste, or, which Municipalities and Industry mutually agree should not be included in curbside waste and require special handling such as collection through municipal Household Special Waste programs or industry stewardship initiatives. Products/Substances on this list could be added or removed subject to annual review of the criteria.

HSW Categories	Examples of Products/Substances Captured Under Proposed Criteria
Enviro-toxicity (captured by definition)	- auto batteries*
Flammables (captured by definition)	- used propane tanks and cylinders - gasoline - any product with a Flammable Symbol as regulated by the CCCR - liquid fuels - petroleum solvents - paint related thinners and degreasers (turpentine, lacquer thinner, acetone, toluene, methyl hydrate, shellac)
Acutely Toxic (captured by definition)	Any product with a Poison Symbol and the key word Danger as regulated by the CCCR.** *- some pesticides* *- some cleaning products*
Corrosive (captured by definition)	Any product with a corrosive symbol and the key word Danger or Warning as regulated by the CCCR. *- specific aggressive cleaners* *- muriatic acid* *- some pool chemicals*
Other Special Waste (not necessarily captured by definition, but which industry & municipalities mutually agree should not be included in curbside waste)	*- medical sharps* - pharmaceuticals* - motor oils and filters - used automotive antifreeze - oil-based paints - latex paints and stains - batteries - rechargeable, etc.*

* Specific industry opinion desired

** Some Products with the Poison Symbol and the key word Caution may also be captured by the acutely toxic criteria, however, discussions are currently taking place with industry as to whether the sample list should include these products.

Products & Substances Under Review

Many of these products/substances are currently accepted by municipal HSW programs but there is no clear scientific evidence established for the need for such products to be managed by these programs OR specific industries need to help establish criteria and communication messages to distinguish between those products/substances that should be managed by HSW programs and those that do not. Items from this list would not be funded under the proposed WDO HSW Funding program but can be moved to the Example List of fundable products or removed from the Review List pending an annual or biannual review.

1. Non-Aqueous Phase Liquids (NAPL's) – not captured under other Schedule "A" criteria. Currently proposed NAPL criteria (any product with an interfacial surface tension with water that is greater than 10 dynes/cm) may capture more benign substances like vegetable oil, in addition to substances like motor oil and chlorinated solvents.
2. Water miscible products, not captured by criteria but of perceived concern, i.e. Water-Based Protectants (i.e. sealers, water repellants, floor finishes), windshield washer fluid.

3. Domestic herbicides, fungicides, insecticides, sanitizers, etc., without the poison symbol.

Additional Products & Substances

By mutual agreement, the concept for long-term funding of Municipal HSW programs developed by the WDO HSW Task Group has not included a number of products/substances that theoretically could be managed by such programs but which currently are not included in the majority of municipal HSW programs.

These products include items such as fluorescent lights, mercury switches, monitors & picture tubes and obsolete electronic products. Municipalities may choose to voluntarily include such items in municipal HSW programs without funding support from industry, or separate funding could be sought from those industry sectors.

Schedule A

Criteria For Materials Not Suitable For Municipal Solid Waste Curbside Collection

Note: Categorization of a substance or mixture as "unsuitable for curbside collection" does not necessarily indicate that it should be managed as HHW, other forms of disposal such as "down-the-drain" may be fully appropriate.

1. Flammable Materials

A product or substance shall be unsuitable for curbside collection if

i. It is a liquid with a flashpoint of less than 37.8 C, except if:
   a) the liquid will not sustain combustion at temperature below 61 C; or
   b) the liquid contains 50% or less water-miscible liquids having a flashpoint of below 37.8 C with the remaining liquids having a flashpoint above 61 C.

ii. It is a material that will promote spontaneous combustion when mixed with certain classes of organic matter as determined by the Differential Mackey Test (ASTM D 3523-92)

iii. It is a Level 3 aerosol as defined by NFPA 30B: Code for the Manufacture and Storage of Aerosol Products.

iv. Reserved for compressed fuel gasses, the criteria to be determined by the appropriate stakeholder group.

2. Corrosive Materials

A product or substance shall be unsuitable for curbside collection if

i. a liquid product or substance or the aqueous slurry of a solid product or substance has
   a) a pH of less than or equal to 1.0 or greater than or equal to 13.0;
   b) a pH of less than or equal to 3.0 or greater than 1.0 and an acid reserve greater than or equal to 5.0 (liquid) or 12.5 (slurry); or
   c) a pH of less than 13.0 or greater than or equal to 10.5, and an alkali reserve greater than or equal to 5.0 (liquid) or 12.5 (slurry)

ii. it has been classified as Class 8 (Corrosives), Packing Group I under the Transport of Dangerous Goods Regulations, Canada.

iii. unless shown, by recognized test protocols, not to be corrosive to human tissue.

3. Oxidizing Materials

A product or substance shall be unsuitable for curbside collection if it has been classified as an oxidizing substance or organic peroxide under the Transport of Dangerous Goods Regulations, Canada.

4. Acutely Toxic Materials

A product or substance shall be unsuitable for curbside collection if:

i. it is a liquid or a solid and has a dermal LD_{50} of less than 1000 mg/kg

ii. a) the vapours from the product or substance has an LC_{50} by inhalation of less than 5000 ml/m3 ; and
   b) a saturated vapour concentration (at 20 C and 101.3 kPa) greater than 20% of the inhalation LC_{50}; and
   c) a package size greater than 500 ml.

5. Medical Sharps

A product or substance shall be unsuitable for curbside collection if it is a medical instrument used to inject, draw blood or puncture tissue.

6. Non-Aqueous Phase Liquids (NAPL's)

To be established.

7. Environmental Toxicity

A product or substance shall be unsuitable for curbside collection if

i. the oral LD50 is less than 50 mg/kg; or

ii. it contains greater than 1.0% of materials that have:
   - a) a value for log K_{ow} equal to or greater than 4.5 and less than or equal to 7.0;
   - b) a half life in wet soil, pH 7.0, equal to or greater than 21 days; and
   - c) .a molecular weight of less than 1000.

Appendices 5 A and 5 B

Appendix 5A

WDO
ONTARIO
WASTE DIVERSION
ORGANIZATION

Summary of Suggestions and Comments

Concerning the

WDO Interim Report / 30 June 2000

Prepared by
the Recycling Council of Ontario

RCO

Ontario Waste Diversion Organization
Summary of Comments & Suggestions: Interim Report 30 June 2000

July, 2000

Ontario Waste Diversion Organization
Summary of Comments & Suggestions: Interim Report 30 June 2000

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Ontario Waste Diversion Organization
Summary of Comments & Suggestions: Interim Report 30 June 2000

Recycling Council of Ontario
July, 2000

Ontario Waste Diversion Organization
Summary of Comments & Suggestions: Interim Report 30 June 2000

List of Appendices

Written Submissions

Ben Bennett, on behalf of the Board of the Association of Municipal Recycling Co-ordinators
Susan Koka, President, Association of Nutritional Awareness
Sharon Glover, Executive Director, Brewers of Ontario
Ed Berry, Vice President, Canadian Manufacturers of Chemical Specialties
Karin David, Director, Member Services, Canadian Paint and Coatings Association
Citizen's Network on Waste Management
Susan Antler, Executive Director, The Composting Council of Canada
Bill Pickard, Manager, Environmental Services, County of Peterborough
Roy Emery, Emery International Development Ltd.
Cathy Cirko, Director General, Environment and Plastics Industry Council
Todd Pepper, General Manager, Essex Windsor Solid Waste Authority
Don Lamont, Executive Director, Ontario Community Newspaper Association
Glen Parker, Manager, Corporate Sustainable Development, Proctor & Gamble Inc.
Rick Clow, General Manager, Quinte Waste Solutions
Peter Watson, Waste Management, Region of Durham
Pat McNally, Co-chair, Organics Committee, Director, Solid Waste, Region of Ottawa-Carleton
Melanie Kawalec, Manager, Waste Management Planning, Region of Peel
Alan Wolfe, Commissioner, Community Services, Town of Markham
Gregory Vogt, President, Super Blue Box Recycling Corp. (SUBBOR)

Ontario Waste Diversion Organization
Interim Report 30 June 2000
Summary of Consultation Process

1.0 Background

In 1998, the Recycling Council of Ontario (RCO) undertook the Recycling Roles and Responsibilities process to identify funding options that would contribute to the sustainability of Ontario's curbside recycling programs for non-durable products and packaging from the residential sector. This process led the Minister of the Environment to develop a Memorandum of Understanding (MOU) which was signed by the Association of Municipalities of Ontario, various industry sectors and the RCO. The MOU established the Waste Diversion Organization (WDO), a voluntary organization with representation from the original signatories to the MOU.

The WDO has a number of obligations as stipulated by the MOU. One of these obligations is to consult with affected stakeholders during preparation of reports to the Minister of the Environment. The RCO has been retained by the WDO to provide assistance with this stakeholder consultation process.

1.1 Waste Diversion Organization

The Waste Diversion Organization was established in November 1999 with a Board of Directors comprised of:

- four members, including the Chair, from among member companies of CSR: Corporations Supporting Recycling;
- four members from among the membership of the Association of Municipalities of Ontario;
- one member from the Liquor Control Board of Ontario;
- one member from the Canadian Newspaper Association;
- one member jointly representing the Canadian Paint and Coatings Association and the Canadian Manufacturers of Chemical Specialties Association; and
- one member from the Recycling Council of Ontario.

The Board of Directors established a number of interlocking committees and task groups to plan and support the implementation of programs to meet the objectives outlined in the MOU. These groups include:

- Funding and Regulations Committee;
- Programs Committee and its sub-groups, the Organics Task Group, Optimization Task Group and HSW Task Group; and
- Communications Committee.

The WDO has been established with the key principles that:

- management of residential waste materials is a shared responsibility between municipalities and industry, and

- industry will be responsible for up to 50% of the net cost of defined residential waste diversion programs.

1.2 Memorandum of Understanding

The WDO Memorandum of Understanding sets out the basis for a voluntary arrangement among the LCBO and companies responsible for products or packaging which is recycled or diverted through Blue Box and other recycling or diversion programs. This arrangement is intended to demonstrate product stewardship by providing funding for such programs and activities. The voluntary arrangement described by the MOU is intended to last for approximately one year and at that time be replaced by more permanent arrangements.

The MOU stipulates the role of the WDO to be:

- acceptance of contributions of money, work and other services in support of its programs;
- disbursement of LCBO funds to Ontario municipalities with Blue Box programs and other programs that recycle empty wine and liquor glass containers;
- disbursement of funding, goods and/or services in support of waste diversion programs, including:
    - the advancement of organic waste diversion,
    - new permanent or satellite municipal Special Household Waste depots,
    - a program to improve the effectiveness and efficiency of Blue Box programs and other municipal recycling and waste diversion programs; and
- planning for the longer term by carrying out investigations of specified topics, including consultation with affected stakeholders, and preparation and submission of reports to the Minister of the Environment.

1.3 Reporting to the Minister of Environment

The MOU requires that the WDO develop principles to guide the development of the long term sustainable funding formula. *Guiding Principles for Development of a Long-Term Sustainable Funding Formula for Residential Materials Recycling Programs* were approved by the WDO Board of Directors on April 12 and forwarded to the Minister of the Environment for review.

The MOU also requires that the WDO submit to the Minister a draft report by June 30 and a final report by September 1 on the following topics:

- options for a long term sustainable funding formula prescribing appropriate levels of annual contribution and appropriate sources of contribution for long term continuation of funding for:
  - up to 50% of the net operating costs of municipal Blue Box programs and other municipal programs that recycle the same or similar materials, and
  - future continuation of the waste diversion programs set up by the MOU and other programs with purposes similar to those described in the MOU;

- a plan for future allocation of funds to municipalities considering eligibility criteria, program cost efficiency criteria, waste diversion targets and the variations in costs dependent on north/south and urban/rural differences;

- development of a standardized accounting system for municipal Blue Box programs and other municipal programs that recycle the same or similar materials; and

- appropriate design of a special household waste management program in which residents may take special household waste to an appropriate depot where the products would be accepted into a program funded by the retailer or manufacturer or as otherwise developed/funded by industry.

2.0 Interim Report to the Minister

The WDO's Interim Report was presented to the Minister on June 30. The report includes introductory comments from the Chair, Mr. Peter Elwood, and the Chief Executive Officer, Mr. Damian Basset, an executive summary and information summarized in four sections:

- Part I - What We Have Accomplished to Date
- Part II - Key Tasks to be Completed
- Part III - The Key Findings to Date
- Part IV - Issues that Have Yet to be Resolved.

3.0 Consultation Opportunities

3.1 Accessing the Interim Report

The Interim Report was posted on the WDO's web page on June 30 for review and downloading. Hard copies of the report were available from the WDO on request.

3.2 Written Submissions

Written comments were accepted at the WDO office up to the end of Friday July 14, 2000 by email, fax or mail.

A total of 18 submissions were received from:

- five municipalities
  County of Peterborough
  Region of Durham
  Region of Ottawa-Carleton
  Region of Peel (including a document prepared by the AMRC HHW Group)
  Town of Markham;

- three government organizations
  Association of Municipal Recycling Co-ordinators
  Essex Windsor Solid Waste Authority
  Quinte Waste Solutions;

- two non-government organizations
  Association of Nutritional Awareness
  Citizen's Network on Waste Management;

- four companies
  Brewers of Ontario
  Emery International Development Ltd.
  Proctor & Gamble Inc.
  Super Blue Box Recycling Corp. (SUBBOR); and

- five associations representing business sectors
  - Canadian Manufacturers of Chemical Specialties
  - Canadian Paint and Coatings Association
  - Composting Council of Canada
  - Environment and Plastics Industry Council
  - Ontario Community Newspaper Association.

4.0 Consultation Comments

To facilitate review, comments submitted by respondents are grouped according to the following five issue areas:

- WDO Process
- Guiding Principles
- Diversion Goal
- Measuring Performance
- Data and Assumptions

Comments are also summarized to follow the Interim Report sections:

- What We Have Accomplished to Date
- Key Tasks to be Completed
- Key Findings to Date
- Issues that Have Yet to Be Resolved

4.1 WDO Process

Timeline

A number of respondents commented on the relatively short timeline of the WDO process.

Some members of the Association of Municipal Recycling Co-ordinators (AMRC)* indicated they were "concerned that the whole rushed nature of this exercise (after so many delays) is compromising the process. It is very difficult to get a quick turnaround of comments, especially at this time of year, and when councils are involved. It has been noted in our discussions that the time frames involved in the WDO process have precluded any real consultation on the fundamental issue of long-term support for municipal recycling, organics and HSW programs. The time frames and sheer volume of effort involved in reaching this point have prevented any true dialogue with the majority of municipalities across the province".

The AMRC submission suggested that "extending the WDO time-frames, until perhaps December 31, 2000, would provide time for the results of current studies to be integrated into the final report, and to allow time for meaningful consultation with stakeholders in the process".

The Town of Markham staff "express concern with respect to the WDO timeline", indicating that this is a "widely shared concern among most WDO participants" and " that the timelines toward generating a Final Report for September 1, 2000 have been extremely stringent and somewhat unrealistic." The Town also suggests that "the option of extending the WDO time-frames, until at least December 31, 2000, should be considered to provide time for the results of current studies to be integrated into the final report, and to allow time for meaningful consultation with stakeholders in the process".

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* **The comments provided in the AMRC submission have been endorsed by the Board of Directors but do not necessarily represent the membership.**

The County of Peterborough indicated they were "concerned that the process is trying to do too much too soon and although action and results are important the process and planning must be sound".

Mandate

The AMRC submission questioned the treatment of organic waste management by the WDO indicating that "organics seem to be an add-on to the process - and this is the area that may have the greatest impact on municipal solid waste operations - both in operations and financial aspects".

The Brewers of Ontario questioned the general mandate of the WDO. "Without any mandate or intention to evaluate opportunities to avoid municipal waste management costs the WDO is reduced to proposing partial funding of the status quo".

The Brewers also commented that the earlier CIPSI process failed in part because it did not encourage industry to develop secondary markets for materials, to design packaging that is easily recycled and to provide technical assistance for recycling packaging efficiently and pointed out that "this critical fault in the CIPSI proposal also finds itself un-addressed in The WDO Interim Report".

The Essex-Windsor Solid Waste Authority questioned a statement in the Executive Summary indicating they "disagree that reducing the quantity of HSW entering the municipal waste stream 'must be the first priority of the WDO'. Even the complete elimination of these materials from the municipal waste stream would have limited effect in achieving the 50% waste diversion objective of the province. Such a priority is contrary to the WDO Guiding Principle No. 2. The first priority of the WDO should be the implementation of a long-term, sustainable funding formula that supports the existing blue box (bag) recycling system, as set out in the WDO Guiding Principles".

The County of Peterborough "believes that Ontario has failed to keep pace with the rest of Canada in its commitment to waste diversion. The province and all partners in the WDO must make this exercise work this time. Ontario, once a leader in waste management, has fallen far behind. The WDO process must be sound, clear, fair and verifiable if it is to gain widespread support and succeed".

Communications

The AMRC submission indicated "general concerns about the efficiency and timeliness of communications throughout the process".

4.2 Guiding Principles

The County of Peterborough "largely supports the 'Guiding Principles'. The County would like to see the principles of reduction and reuse incorporated into these initiatives" and tackled in the five-year transition period. However, the County indicates that "the interim report quite frankly is difficult to follow and appears to deviate from the Guiding Principles".

The Canadian Manufacturers of Chemical Specialities (CMCS) comments that "the Interim Report speaks of combined guiding principles. CMCS is strongly opposed to this approach. Considerable time and effort were expended on developing guiding principles for the management of HSW that clearly recognized the essentially different needs of such programs from those to divert residential materials and organics".

4.3 Diversion Goal

A number of respondents supported reviewing the 50% diversion goal.

The Brewers of Ontario suggest that "the continued pursuit of '50% waste diversion' target needs critical review given that no consideration is given to *what* those diversion efforts should focus on. Additionally, the 50% diversion target does not consider the merits of *how* to avoid creating waste or how to recover particularly valuable or environmentally burdensome materials. Accordingly, curb-side collection of materials (a mitigating not a preventative measure) remains the sole approach to 'diverting' waste rather than but one important component of a more integrated producer responsibility model that could include product take-back, deposit-refund systems and Manufacturer Controlled Networks (e.g. The Beer Store) etc.".

CMCS indicates "it is clear that the costs associated with attaining a diversion goal of 50% appear to place disproportionate stresses on the sustainability of future diversion actions. CMCS supports the authors of this report in questioning the validity of this target. These concerns indicate a need for major rethinking on objectives and goals". The Canadian Paint and Coatings Association (CPCA) also questions the appropriateness of the 50% diversion, suggesting a cost/benefit analysis be done.

Proctor & Gamble (P&G) indicates that, "in view of the challenge (of reaching 50% diversion), we should first confirm whether or not 50% diversion is the right surrogate for the real goal which is to minimize overall environmental effect at a reasonable cost. This can be guided by conducting an environmental lifecycle study on the changes that would be required to get there. As CCME has backed off from 50% diversion as a national goal, this leaves more flexibility for Ontario to set a different diversion goal based on more detailed environmental as well as financial guidance. Note that the challenge to determine the optimal level of diversion and to consider other environmental factors is identified in several places in the report including pages iv, vii and 48. Also, Principle 2 on page 28 makes it clear that diversion should be encouraged 'in a manner which is environmentally appropriate, cost effective and socially acceptable to each community'. I believe that we have the opportunity to be more specific about how to answer this question by recommending the use of the life cycle tool to provide better guidance on what goal would be suitable. The importance of this diversion goal review is highlighted by the significantly increasing costs of each new increment of diversion. It is noted on page 21 in the context of the higher costs of incremental diversion that the benefits of diverting 50% of the waste stream are not clear. Another useful solution would be for the province to make it clear that, whatever overall provincial goal is adopted, there should be flexibility to vary the goal among municipalities to meet local sustainability circumstances".

Citizens' Network on Waste Management also supports reviewing the 50% diversion goal. "In section 4.2, the WDO recommends that there be an assessment of the 50% diversion target. We agree with the need for such an assessment. We believe that the 50% diversion goal as defined by the Province and as used as a basis for WDO decision-making in sections 3.1 and 3.2 is seriously inadequate for several reasons:

1. The goal is not aggressive enough. The WDO seems to be flirting with the idea that a goal that is less than 50% should be adopted. This kind of backtracking should not even be contemplated.

2. There should be specific diversion goals by material type. If the WDO focuses only on an overall 50% diversion target, the programmes that it carries out may not have the maximum impact in terms of protecting the environment. It also means that the funding formula that the WDO develops may not properly distribute the financial burden among sectors according to which sector or material type is creating the biggest problems.

3. The goal is a *diversion* target. In addition to this goal, there should be one for reducing waste generation. WDO and its member organizations have an essential role to play in reducing waste generation through the redesign of products to use less materials, to be more durable, to be repairable, etc. This must be integrated into the WDO programme.

4. The goal as defined in Table A does not give enough weight to the first two R's: reduce and reuse. Much more emphasis should be put on additional reduction systems, such as reuse and return systems, as mechanisms to avoid having waste go into the municipal waste stream."

Citizens' Network on Waste Management goes on to "recommend that the provincial targets include:

- a target for reduction in waste generation,
- an overall waste diversion target from landfill and incineration, and
- a series of differing diversion targets by material type.

Each of these targets must have dates, including interim targets and dates, attached to them and must state what action will be taken if the targets are not met. The WDO should develop its recommendations on the basis of targets of this type".

The AMRC submission points out that "if the focus in the diversion targets is solely tonnage based, programs that successfully divert heavy materials like newsprint and organics will appear to be more successful than municipalities that are diverting the same or more volume of much lighter materials such as plastics. Consideration should be given to material specific and/or product specific targets".

Other respondents indicated that the 50% diversion goal is appropriate and a review would not be productive.

The County of Peterborough does not support reviewing the 50% diversion goal indicating "the County considers the whole debate on 50% diversion as very unproductive. Data in this report suggests that recycling from single family residences is more cost effective than waste disposal. It has also been shown that municipalities committed to achieving the 50% diversion number have been able to do so. The County believes that the objective should be to embrace the 50% diversion goal and dedicate energy to this end rather than circular debates on what the precise achievable/affordable diversion number is".

The Town of Markham staff also "express concern with respect to the proposed redirection of the provincial 50% diversion goal".

4.4 Measuring Performance

Many respondents provided suggestions to assist the WDO in developing performance criteria.

Measuring Performance

The Town of Markham suggests that "in regards to performance, it is important that performance measures be standardized and applied to the provision of funds for recycling and HSW programs. Great caution must be taken to ensure that the performance measures applied to the long-term funding programs are feasible, fair and equitable".

Measuring Diversion

The AMRC submission noted that "it is important that performance measures applied to the provision of funds for recycling programs should be specific to the stream of materials recovered for recycling and not overall diversion goals. Likewise, if performance measure are developed for HSW funding, they should be tied into a performance measure that is specific to that segment of municipal diversion programs. Great caution must be taken to ensure that the performance measures applied to the long-term funding programs are fair and equitable, and feasible to implement".

The Essex-Windsor Solid Waste Authority points out "that waste diversion in Ontario is supposed to be measured against the 1987 historical baseline, as set out in the Ministry of the Environment and Energy *Initiatives Paper No. 4: Measuring Progress Towards Ontario's Waste Reduction Targets (June 1992)*".

The CPCA suggests that for HSW, performance should be measured not only through diversion, but also through "eco-efficient" management of the products collected.

The Region of Durham suggests that "the calculation of a residential waste diversion rate needs to be clearly defined as being one of the following measurable annual rates of diversion:

- Residential "curbside" recycling diversion rate:

$$\frac{\text{Tonnes of residential recyclable collected \& processed}}{\text{Total tonnes of all residential waste disposed}}$$

- Residential "multi family" recycling diversion rate:

$$\frac{\text{Tonnes of residential recycling collected \& processed}}{\text{Total tonnes of all residential waste disposed}}$$

- Residential composting diversion rate:

$$\frac{\text{Tonnes of residential compostables collected \& processed}}{\text{Total tonnes of all residential waste disposed}}$$

- Residential waste diversion rate:

$$\frac{\text{Tonnes of residential recyclables, compostables \& reuseables collected \& processed}}{\text{Total tonnes of all residential waste disposed}}$$

These formulas permit common tracking, in tonnes, of all measurable residential waste materials, being recyclables, compostables, reuseables, and garbage residue. These formulas do not accommodate any calculated or estimated waste quantities such as grasscycling and backyard composting as these particular materials are not actually collected, processed, or disposed of in a municipal program. By definition, these materials are kept out of the municipal waste stream by residents. Thus only residential materials collected and processed by the municipality are considered".

The Region suggests that "the benefit of the four distinctive formulas is that considerable time and effort has been allocated by municipalities on 'Residential C
and accordingly, the municipal residential recycling diversion rates should be in the range of 15% to 25% of the total waste stream. However, composting of organics and multi family recycling are relatively new and the respective diversion rates will be considerably less. To reach the 50% residential waste diversion goal, these two rates must increase significantly. This is municipally attainable over time and with a concentrated effort. The combined diversion rates for these two of 25% to 35% can be achieved. The difficulty with the multi family diversion rate is it is community based. Some municipalities provide this service while others do not. To be comparable, the residential waste diversion rate formulas must be basic and common to all municipal programs. Perhaps a funding formula can be crafted to reflect the applicable community residential recyclables waste diversion rate(s)".

Measuring Efficiency

Quinte Waste Solutions indicates that "expanding the range of recyclables collected may improve waste diversion efficiency, as would the amount collected as compared to the amount available, but would reduce financial or operational efficiency. Several points make note of efficiency, including the 'model of comparison', the 50% funding point and the bonus payment note. As such it will be important to ensure an acceptable definition of efficiency".

Measuring Cost-Effectiveness

The Region of Peel submitted a *Co-ordinated Municipal Response Based on Discussions with the WDO HSW Task Group members and AMRC HHW Committee members.* This document states that "municipalities do support a funding approach that is linked to clear incentives and performance measures. In regards to the cost effectiveness of municipal programs we would support comparison against average program costs per tonne (recycling), per capita or per household served (HSW), as an iterative process subject to annual review of municipal costs". The Town of Markham echoes this statement.

The Region of Durham requests that "reference should be made to whether a municipality has single tier or two tier waste management responsibilities and for how long. This makes a big difference in a municipality's ability to implement cost effective residential recycling, composting, and re-use waste diversion programs. For some municipalities, they have had the opportunity to improve their waste system over many years, while others are in a period of transition through municipal restructuring. For example, Peterborough and Guelph are long term single tier waste management municipalities, while Toronto, Halton, Peel, Hamilton, & Niagara are new single tier communities. York and Durham have two tier waste management systems where local municipalities are only responsible for the collection of selected waste materials".

The Region of Durham also points out that "regional issues have a significant impact on 'net recycling costs'. For example, there are major impacts:

- based on the distance recyclable materials are hauled from a recycling center to the industrial buyer,
- the cost of collecting recyclables due to the housing density of the residential community,
- on the cost of recycling dependant on when, and for how long, service contracts for collection, and/or processing, and/or marketing of recyclables were awarded, and
- on how the market prices recyclable materials.

To be comparable, these issues need to be addressed and be common to all municipal programs. Perhaps a funding formula can be crafted to reflect the net cost of providing a residential curbside recycling program. This would be different from the Multi Family formula".

4.5 Data and Assumptions

Diversion and Cost Scenarios

The County of Peterborough questioned the presentation of alternative diversion scenarios. "If the guiding principles aim at 50% diversion, then what leads to a discussion of two other groups of scenarios? More fundamentally, the scenario numbers appear purely arbitrary and there appears to be little connection between the diversion number and any work that would suggest such activity would have such an outcome. The same comment relates to the cost scenarios. What analysis has been done that develops these costs based on these events all of which appear quite hypothetical.? This scenario activity appears to be not particularly productive and more than confusing".

Validity of Data and Assumptions

Other respondents questioned the data, projections and supporting assumptions presented in the Interim Report.

The submission from some AMRC members indicated "there is a great concern amongst many municipal participants in the process that conclusions have been reached and assumptions have been made that either cannot be supported with existing information or which may not fulfill the requirements of municipalities. Many participants have indicated they feel uncomfortable about supporting decisions for which insufficient information is available, or where insufficient time has been given to carefully consider the ramifications of such decisions".

This submission suggests that, since "the necessary information to support long-term funding decisions will not be available until later in 2000 once the results of approved Round One, Two and Three projects are available, extending the WDO time-frames, until perhaps December 31, 2000, would provide time for the results of current studies to be integrated into the final report, and to allow time for meaningful consultation with stakeholders in the process".

CMCS points out that "there appears to be a conflict in the data relating to projected HSW quantities between information of page 47 and that on page 54".

Citizens' Network on Waste Management points out that "Table A, 'Getting to 50% Waste Diversion' on page 47 assumes that per capita residential generation of waste will remain the same between 1998 and 2006" and indicates that "from an environmental perspective, this is not acceptable".

The Region of Durham questions whether data properly reflects waste generated within multi-unit buildings. "Another barrier in the Multi Family sector is that many of these buildings receive private garbage collection service. With this being the case, they should receive private recycling and composting services. Accordingly, these quantities of waste materials do not necessarily enter the regular municipal waste stream. So, are these materials being collected for recycling and composting? If so, can they be accounted for properly"?

Cost Data

The Town of Markham points out that, "while it is important to make diversion options more economically favourable to disposal options, we must be realistic in our predictions and assumptions. The Interim Report, on page 18, states a 1999 estimated net cost for recycling of $99 per tonne and a projected net cost of $59 per tonne in 2000 which is due, 'in part, to stable collection and processing costs combined with rising revenues'. In an era of increasing collection costs and stabilizing revenues, how can net costs for recycling in Ontario decrease from $99 per tonne in 1999 to $58 per tonne in 2000, just one year later"?

The AMRC submission specifically questions the cost data presented. "Concern has been expressed regarding the various figures used in the Interim Report. The average net cost of recycling of $99/tonne is generally assumed to be based on the recent survey of 1999 municipal recycling costs. The net program cost of $59/tonne suggested for 2000 represents a dramatic decrease and is too low. While revenues have greatly improved this year, we are only partway through and there are already signs that fibres, which drive the revenues, are moving down in value". "In the case of waste collection and disposal costs, the basis for the $80 to $100/tonne cost is unclear, likewise the apartment waste figure. The report should include references for all figures used so that the basis for these calculations are clearly understood. Given the size of the larger urban municipalities, one contract can dramatically affect the overall provincial net cost of waste collection (or, indeed, recycling). Any formulae should be weighted to account for this."

Cost Projections

The AMRC submission suggests that "cost projections of net recycling costs for the next five years should not be based on a single 'snap-shot' (the estimated 2000 costs) but should be based on at least a three-year average net cost to account for potential variability in revenues, contract costs etc. Also, the addition of new materials could affect the prices paid for those materials. Projections cannot be made based on today's program conditions. Major packaging changes, such as soft drinks away from aluminum, would have a dramatic effect on revenues. Changes in regulations could see more materials added (or removed). This could also affect revenues".

The Town of Markham supports these views. "Cost projections of net recycling costs for the next five years should not be based on a single 'snap-shot' (the estimated 2000 costs) but should be based on at least a three year average net cost to account for potential variability in revenues, contract costs etc." "It cannot be assumed that markets will continue to be as strong as they have been during the first half of this year since many factors can impact on the strength of recycling markets. For example, if the City of Toronto improved its capture rate for recyclables by 10% or more, the resulting flood of materials on the recycling commodities market can be anticipated to soften markets, especially for many of the fringe materials such as the majority of plastic resins. Also, the soft drink packaging industry has yet to reaffirm its commitment to the long term use of the aluminum can. Future reductions in aluminum's market share will have very negative affects on overall recycling costs. One method that may stabilize recyclable markets is the introduction of some form of guaranteed floor pricing for materials at the end market. Alternatively, industry must recognize the need for changes to packaging design and packaging material choices in order to ensure that there is an economically sustainable market for recovered materials."

The Town of Markham also points out that the Town "operates a relatively efficient recycling program with net costs for recycling that are not unique in Ontario. In 1999, Markham's recycling program cost approximately $93 per tonne net of revenues. This translates into $6 or 6% below the 1999 provincial average, as stated in the Interim Report. In 2000, based on an estimated 2% inflationary increase in collection costs and an aggressive increase in recycling revenues to $80 per tonne, Markham's net cost for recycling will still only drop to $87 per tonne, or $29 higher than the Interim Report's provincial average cost forecast. If Markham's costs remain approximately 6% below the provincial average in 2000, as they did in 1999, then the 2000 provincial average net cost for recycling should be $92 per tonne. Assuming the Interim Report's recovery estimate of 702,000 tonnes in 2000, the net cost of residential recyclables in Ontario, in 2000, should be an estimated $65 million, not $41 million as stated in the Interim Report".

Quinte Waste Solutions also questions cost projections, asking "can one really assume high market revenues for the next five years? An increased supply of crude oil is anticipated on the market within one to two years and this should lower the cost of recycled materials thus reducing market revenue. Should aluminum decline as a container material of choice we will see a major reduction in market revenues. The anticipated net cost in 2000 of $59/MT is unreasonable. This Board's 1999 net cost was $116/MT as compared to the estimate of $99/MT. We included not only capital costs but also unrecoverable GST and there are other costs that require some form of agreement as to how to include them. Also, what of renewing contracts with the potential for increased costs"?

Quinte Waste Solutions indicates they "concur that market development is important; if there is an increase in the capture of recyclables (for example more municipalities start to collect boxboard) the short term market reaction might be a decline in market value; this should be anticipated and overcome. The long term goal should be to ensure a reasonable market price for all commodities".

Regarding organics, the AMRC submission suggests that "some of the cost assumptions are very rough generalities, and should not be relied upon without further research".

EPIC suggests expanding the scope of cost projections. "If we had data on the relative performance of waste management systems in addition to costs, then we would benefit from more informed decision-making. Over the last few years, progress has been made around the world on doing just that. Today, here in Canada, you have the CSR/EPIC Environmental Analysis Computer Model. It is a tool that does provide information on environmental performance for different waste management scenarios that one may wish to consider. Our suggestion would be to do additional work on defining the environmental implications of the different scenarios for reaching the 50% diversion goal. We have no objection to utilizing the above noted model to assist in this exercise. By so doing, we believe everyone will benefit from the consideration of the interrelationship between environmental benefit for cost incurred."

P&G suggests that "as we progress with an analysis of the funding options, we should all be ever mindful of the need to avoid interprovincial and international trade disadvantages/barriers. The world is becoming too small to do otherwise. One way to help avoid trade barriers is to remember that, with regard to industry funding models, they must contain an incentive for municipalities to continue to move towards more cost efficient systems, and they must be administratively simple enough to keep costs down. As, with regard to funding models, simplicity and fairness tend to be mutually exclusive, the right balance between the two will have to be found to meet this cost objective".

4.6 What We Have Accomplished to Date

Part I of the Interim Report presents a summary of the accomplishments of the WDO to date. Respondents provided comments on these accomplishments and/or the manner in which they were presented in the report.

The County of Peterborough comments that "the organics section makes some very questionable comments when describing what municipalities are prepared to do and for what reasons. Paragraph four on page 21 infers that municipalities do not recognize the benefits of organics diversion. The paragraph also sets municipalities and the province on opposite sides of the diversion debate. Municipalities support waste diversion and that is readily proven by their willingness to participate in the many recycling initiatives of the late 80's and early 90's. If there is any reluctance on the part of municipalities, it lies in the concern that after they embrace this enhanced effort to divert waste through expanded recycling HHW and organics programs that its funding partners being the province and private sector disappear as was the case in the early 90's".

The County also points out that, while "it was interesting to note in the discussion of HSW that the emphasis is on reduced generation", "this of course should be the goal of the optimization and organics group and quite frankly, this is simply the 3R's dressed in

The Essex-Windsor Solid Waste Authority refers to "the paragraph at the top of pg 10 (which) states that the 'year 2005 cost of recycling curbside recyclables is expected to be less than the cost of treating this residential material as garbage'. We believe that consensus was reached at the Funding and Regulations Committee that this was not an issue when calculating the net cost of municipal recycling programs. In addition, the argument does not take into consideration the fact that the residential recycling program is a complete duplication of the garbage collection system. On the basis of this point, we believe the last two sentences of this paragraph should be deleted".

The Essex-Windsor Solid Waste Authority also points out that, "in the last paragraph on pg 21, there is a reference to the City of Windsor. The reference should be to Essex-Windsor. The Essex-Windsor Solid Waste Authority, who is responsible for all waste management activities in Essex-Windsor except local garbage collection, has implemented a number of innovative approaches in all of our 8 constituent municipalities for organic waste. These include the brown-bag-it program in the City of Windsor, a three stream collection system in the Town of Essex, and weekly yard waste collection programs in the urban areas of all of our other constituent municipalities, as a result of the condition on our Certificate of Approval that bans the disposal of yard waste".

Quinte Waste Solutions refers to page 17 indicating that "waste reduction programs would also be of assistance to the goals including improved packaging material choices and design".

4.7 Key Tasks to be Completed

Part II of the Interim Report describes key tasks still to be completed by the WDO.

The Essex-Windsor Solid Waste Authority refers to page 39, Work to be Done by Funding and Regulations Committee, stating "we believe that the Funding and Regulations Committee should be discussing and recommending to the Minister an organizational structure that will replace the existing organization at the end of the current year. The replacement organization should be a stand alone agency with its own independent staff and administrative resources to collect and disperse funding under the model that is approved for this purpose. The organization should have a Board of Directors that is equally represented by contributing industries and receiving municipalities".

4.8 Key Findings to Date

Part III of the Interim Report presents information on the key findings of the WDO work to date. This section of the Interim Report is presented in five sub-sections and comments are summarized accordingly.

4.8.1 Getting to 50% Diversion

The Composting Council of Canada (CCC) agrees that "organics recovery holds the key to the attainment of significant diversion levels above current Ontario rates. While the composting industry (which includes the range of options from backyard to centralized composting) has grown exponentially in the past decade, further exponential gains are possible. To ensure that this potential reflects both opportunity and efficiencies, it is critical that the Waste Diversion Organization see its role in both building the diversion infrastructure for composting and contributing to the development of compost end markets".

The County of Peterborough comments that "it is stated on page 48 that achieving the first 29% diversion was relatively straightforward. The County believe that it was far from straightforward and was constantly confounded by detractors. This achievement was hard won and required considerable commitment. If there is a genuine commitment from all participants to achieve the next 21% in an environment of co-operation grounded by the guiding principles, 50% is achievable and affordable. The County in fact has exceeded the 29% provincial average".

SUBBOR points out that "capture and recovery of waste from multi-family households has been shown to be a key determinant in reaching levels above the current 29% diversion rate and your finding that this will require a technical shift is important. It may be productive in this regard to make mention of new technologies which can process mixed waste, therefore overcoming the barriers of the technical shift for processing mixed multi-family household waste".

4.8.2 Paying for Diversion Programs

The Brewers of Ontario suggest that "the WDO's description of producer responsibility as simply a function of taxes and levies paints a limited picture of how such systems really operate. Reducing a discussion of full producer responsibility (pg 49 Section 3.2 Who is the polluter) to simply a discussion of 'green taxes' and 'product levies' without a description of the system in which such fees are levied is misleading".

The Brewers disagree with the statement on page 50 regarding experience in other jurisdictions. "While the WDO contends that various producer responsibility models of other jurisdictions have not had an impact on product and packaging design this is far from being the case. Where variable collection and processing fees are levied by material type (e.g. in Germany's Green Dot program) costly materials such as plastics have seen a dramatic reduction in use. Since its introduction, Germany's program has effected an overall reduction of 13.4% in packaging use as industry works to avoid recycling costs."

The Brewers also disagree with the presentation of deposit refund systems on page 50. "The WDO Interim Report incorrectly characterizes deposit refund systems as targeting the consumer. Deposit refund is nothing more than an economic instrument (totally analogous to 'pay-by-bag') used to provide consumers with an incentive to return packaging and products. A deposit refund system is a waste management system either operated directly by the producer, by another entity in the product or package life-cycle (e.g. the retailer) or by a third party (private depots, municipalities etc.) Most importantly, deposit refund systems are full producer responsibility programs whereby the costs of the system are borne by producers (brand owners) and their consumers". "Recent Canadian data indicate that industry run deposit refund systems are the most cost effective systems for recovering beverage container materials at high rates. These data provide strong indication that as industry internalizes the costs of managing its own packaging (whether through deposit return or any other producer responsibility mechanism) it reduces those costs through efficiency."

The County of Peterborough suggests "that there is a need to provide R&D funding if program efficiencies are to be made. Funding for R&D should be outside the 50% net cost discussion and should represent a significant percentage of provincial diversion program costs, maybe as much as 20%".

The CPCA likes the idea of an "eco-fee" that is visible to consumers.

4.8.3 The Role of User Pay

Quinte Waste Solutions provides corrected information for the reference on page 52 to population. "A point of fact: (page 52) The City of Quinte West's population is 42,000

"CMCS is pleased to see that the Interim Report presents a discussion of the role of user-pay programs as options to finance diversion programs. It is often forgotten that even in so-called 'industrially funded' programs, it is the user that pays."

CMCS also points out that, "while we consider it unfortunate that the Retail Council has chosen to withdraw from the process, CMCS has substantial agreement with the 'pay-as-you -throw' approach proposed by this sector as a basis for funding municipal waste management. We request that a full presentation of this position be included in the Final Report to enable the Minister to include these concepts in consideration of future sustainable funding options".

4.8.4 There will be a Need for Regulation

The AMRC submission questions "if the 50% target is accepted, will there be any attempt to make the target binding or to ensure that there is movement in progressing towards the 'directional goal'?"

The AMRC members represented in the submission and the Town of Markham point out that "municipalities cannot be held *solely* responsible for the success in achieving diversion targets, when industry has the opportunity to assist in achieving these targets through product redesign, industry managed take-back and stewardship programs".

The Town of Markham also suggests that "enforcement of program changes should not be directed solely at the municipal level, but should also be directed at industry".

CCC points out that "the current document makes note of the potential for organics bans. The members of The Composting Council of Canada have significant experience and different perspectives in the potential and reality of this type of direction. As more discussion ensues over the next few weeks, we would request that The Council assist the WDO in bringing together these different viewpoints (pro/con) to ensure the ultimate attainability of the decided direction".

The Brewers express concern that "the WDO proposes that municipalities not only continue to bear a disproportionate responsibility for packaging management but that they be further subjected to regulation (e.g. expansion of existing 3Rs regulations to include organics) and increase program administration (pay-by-bag programs, bag limits, mandatory recycling ordinances, landfill bans, etc.)".

CMCS "concur(s) with the conclusion that, as a level playing field cannot be established ganics', diversion of these should be the responsibility of the municipal and provincial government sectors".

4.8.5 Sharing the Costs

Recycling Programs

The AMRC submission indicates that, "in general, there is support for the preliminary recommendation that the net costs of operating municipal residential recycling programs should be shared equally". The *Co-ordinated Municipal Response Based on Discussions with the WDO HSW Task Group members and AMRC HHW Committee members* and the Town of Markham echo this statement.

The submission points out that choice of packaging material, specifically aluminum over steel for beverage containers, is one way that industry can share the costs of residential recycling programs. "We continue to express our concern that we are very reliant on aluminum revenues and a change in packaging material could reduce revenues and thus increase net costs by up to $20 million per year! Once a funding formula has been found, there will be no reason for an industry group to 'subsidize the blue box' by using a high-value material. While we recognize the tremendous contribution the soft drink industry, for example, has made to supporting recycling, it cannot be expected to carry the other players and we assume any new funding formula would recognize this. We should, therefore, make provision for a significant drop in the revenue side of the ledger and plan accordingly."

The submission also suggests that "development of strong markets for recovered materials is a key industry responsibility. In addition, industry must recognize the need for changes to packaging design and packaging materials choices in order to ensure that there is a market for recovered materials".

The Brewers of Ontario comment that "the WDO's definition of 'shar allocates the financial benefits of products and packages to product producers and retailers while 'sharing' the collection and recycling costs of those products and packages with municipalities (taxpayers). In addition, municipalities bear all landfill costs associated with the disposal of un-recovered packaging. Some consider this approach equitable contending that since municipalities are held responsible for increasing diversion, the costs of disposing un-diverted materials are really the costs associated with a lack of municipal diligence in driving diversion activities". "An alternative model would be for municipalities to become service providers that charge industry (specifically an industry body convened through a backdrop regulation) for their services. An attendant benefit of this model would be the introduction of a competitive waste management marketplace whereby municipalities compete with private operators (and even one another) to provide collection and processing services. In this model price would reflect both the efficiency and the 'true' costs of the materials being handled with the most efficient operators being most competitive and the most efficient programs being the result of competition and not complex 'efficiency' formulas."

The Citizens' Network on Waste Management rejects the WDO Interim Report proposal that industry "pay for 50% of residential recycling costs". "The 50% contribution by industry to residential recycling costs is too low. Other jurisdictions require industry to pay a much higher percentage of recycling costs. Such an approach is essential to place more of the burden on the producers of the products and packaging to encourage them to redesign their products and to design reuse, repair systems etc. which only they can develop." "We recommend that industry be responsible for paying approximately 70% of the residential recycling programmes."

"The Region of Peel agrees with the recommendation that net costs of operating municipal recycling are shared between municipalities and industry, but that:

i. The funding allocation model performance measures should be fair, equitable and feasible to implement
ii. Cost projections should be based on a multi-year average
iii. Diversion targets should consider the type of material and not just tonnages due to the weight difference of materials, for example plastics and newsprint."

The Region of Durham comments that "there is support for the concept of a long term sustainable funding formula for Blue Box recycling. Based on the Memorandum of Understanding, the Waste Diversion Organization should maximize the funding formula and promote the position that 50% of the municipal costs to collect, process, market and sell residential recyclables should be obtained directly from the manufacturers, producers, retailers of those recyclable consumer products. However, only residential recyclables should be considered. The recyclables from the commercial, institutional and industrial sector should be addressed separately".

The Ontario Community Newspaper Association (OCNA) comments that "the greatest contribution our industry can make is unpaid advertising. To succeed, the new initiative must change human behavior through public education. Advertising must be an integral part of the strategy. Newspapers incur real costs when they volunteer unpaid advertising but this approach likely provides the recycling effort with more advertising and promotional resources that could otherwise be garnered by the regulatory method. We propose to contribute $300,000 to WDO in unpaid print advertising for year 2000 plus web site advertising where our members have web sites. This contribution is generous when one considers circulation, publishing frequency, page count and the ratio of tabloid/broadsheet editions; however, it is not considered to be a baseline for any future contributions. In addition, we offer web site advertising in the form of small banners with links to the WDO web site. About 135 OCNA members now have web sites. We cannot yet calculate the market value of this advertising but it is considerable".

Organics Programs

The AMRC submission suggests that "there is general support for the suggestion that the province consider providing funding support for municipal organics diversion programs". The *Co-ordinated Municipal Response Based on Discussions with the WDO HSW Task Group members and AMRC HHW Committee members* and the Town of Markham echo this statement.

The AMRC submission and the Town of Markham both commented that "in order to ensure the long-term sustainability of composting programs, funding for market development for municipal compost is required. Composting proposals should be assessed not just according to the amount of diversion of materials from municipal landfill, but on the quality and marketability of the final material".

The AMRC members who were represented also suggest that "the process for looking at funding for organics needs to be improved to reflect the nature of organics".

The Citizens' Network on Waste Management rejects the WDO Interim Report proposal that industry pay "none of the costs for organic diversion programmes". "The WDO proposes the provincial government rather than industry contribute towards the costs of diversion of organics. We agree that the Province should help municipalities set up these programmes. We think that there are, however, certain industrial sectors that obviously do contribute to organic wastes, e.g. food stores, and these should make contributions to these costs. The contributions by the Province and some industries should not be restricted to set up. They should also make a commitment to municipalities to help them in the on-going operation costs." "We recommend that some industries contribute towards organic waste diversion."

The County of Peterborough suggests that "the challenge of identifying a funding formula for organics (kitchen and soiled paper waste) may be a challenge but the source of this material can be identified and thus who is responsible".

The Region of Peel comments that "since significantly greater quantities of organic wastes are required in order to meet the provincial diversion goal of 50%, the Region of Peel agrees with the WDO recommendation that the province share in these costs and that the province should provide funding for capital and operating costs to get organics system infrastructure in place. However, the Region of Peel questions the comment that there is no brandowner for food waste since many large corporations produce and market food products. The Region of Peel agrees with the WDO's comment that 'without financial assistance, many Ontario municipalities are unlikely to move forward on implementing organics diversion programs in the current climate of fiscal restraint'."

Mr. Patrick NcNally from the Region of Ottawa-Carleton submits comments "as Co-Chair of the Organics Task Group, as well as Director of Solid Waste for the Region. Although the text of the Interim Report states that organics costs are '... expected to fall to municipalities and/or the province', the table on P54 shows 100% Municipal funding. As Co-Chair, I must point out that the Task Group has not made the 100% Municipal funding recommendation, and as a Director in Ottawa-Carleton, I am concerned about the impact these new costs could have in my municipality on waste management and other programs. The local municipal politicians have a difficult time as it is trying to balance the competing needs of the community, and I suggest some provincial funding or support through various forms of legislation will be necessary. Even with 'brand owners', it has taken many years and significant funding along the way to get recycling where it is. Organics diversion represents a huge cultural change and a significant cost. Only through strong partnership and sound planning will we get there".

HSW Programs

The AMRC submission indicates that, "in general, there is support for the preliminary recommendation that the net costs of operating municipal HSW programs should be shared equally". The *Co-ordinated Municipal Response Based on Discussions with the WDO HSW Task Group members and AMRC HHW Committee members* and the Town of Markham echo this statement.

The Citizens' Network on Waste Management rejects the WDO Interim Report proposal that industry "pay 50% of hazardous solid waste (HSW) management". "The 50% contribution by industry towards HSW management is completely unacceptable. The producers of the products that become HSW should pay all the costs of recovering and reusing, recycling and, if necessary, disposing of the products that they have sold to the public. We must maximize pressure on the manufacturers of these products to change their product formulations to remove the hazardous components in them. If those companies that create those products have to pay all the costs, which are dramatic, of properly retrieving and handling HSW, they are much more likely to change their products." "We recommend that industry be responsible for paying 100% of the costs of hazardous waste management."

"The Region of Peel agrees with the recommendation that net costs of operating municipal HSW programs are shared between municipalities and industry, but that:

i. The funding allocation model performance measures should be fair, equitable and feasible to implement
ii. Cost projections should be based on a multi-year average
iii. Diversion targets should consider the type of material and not just tonnages due to the weight difference of materials, for example plastics and newsprint."

CMCS and CPCA agree that capital funding of the HSW post-consumer product management systems is not a responsibility of industry. CMCS states that "the Interim Report notes that the province is providing start up funds for capital investment for Organics. We comment that it could do the same for HSW, should it be considered essential. Our industry strongly objects to becoming involved with funding of municipal capital expenses. (We had no choice in Year 1 of the WDO, as the MOU forced this issue, but objected from the start to its being an industry responsibility.) Development of waste management infrastructure is the responsibility of taxpayers, through municipalities. If such infrastructure is needed on a one-time basis, the provincial government would be an appropriate source for this funding."

Waste Programs

The Citizens' Network on Waste Management points out that, "in the 'Sharing of Costs' section 3.5, the WDO leaves out one cost - waste disposal. The creators of the products and packaging that end up in landfills and incinerators should be just as responsible for contributing to those costs as they are for recycling programmes. The same reasoning for contributing to these costs applies here (incentive to redesign). If companies have to pay for recycling but do not have to pay for disposal, won't it be natural to recycle as little waste as you can get away with"? "We recommend that industry be responsible for paying 70% of the costs of waste disposal."

4.9 Issues That Have Yet to Be Resolved

4.9.1 Should There be a Sunset Date for the Activities of the WDO?

The County of Peterborough comments that "it is interesting that the first unresolved issue identified is consideration of ending this exercise. It must be made clear that the County and likely most municipalities will not support a sunset arrangement on shared diversion initiatives. This sunset notion will cause municipalities to be reminded of the impact of lost funding in the nineties where continued support would have resulted in higher diversion numbers that those that have been achieved to date. The province must make it clear that ongoing support is a given".

CMCS suggests that, "whether or not there is to be a sunset date for WDO activities, CMCS considers that a five year review is an essential precondition for the continuance of any agreement to ensure that we are not locked into what might prove, based on experience, to be less than optimal approaches to waste management. The statement on page vi, The Future of the WDO, item 1, is too weak in this regard".

P&G agrees with this position, indicating "that a five year review as a precondition for the continuance of any agreement is essential to ensure that we are not locked in to what might prove, based on experience, to be less than optimal. The statement on page vi, The Future of the WDO, item 1, is too weak".

The Citizens' Network on Waste Management does not specifically recommend a sunset date for the WDO but does specify a role that is not appropriate for the WDO. "One issue that has not been addressed in the WDO Interim Report is how we monitor to ensure that the waste diversion targets are being met and that the funding mechanisms are being properly implemented. We do not believe that this is a role that the WDO can play since it is too dominated by industry and municipalities. We recommend that the Province annually release a report assessing progress towards the Province's targets and goals for waste management. The Ministry should solicit public input to this evaluation and formally respond to that input."

OCNA also does not comment on a sunset date for the WDO but does request an opportunity to participate in future activities. "Our industry is very interested in participating in the upcoming discussions about long term funding formulae. We clearly have a stake in the process. In light of our voluntary contribution, we wish to be invited by WDO/CSR to sit on the WDO and CSR Board and Committees."

4.9.2 Should Existing Provincial 3Rs Regulations be Re-Evaluated?

The Citizens' Network on Waste Management "support(s) the WDO's call for the Province to revise its waste regulations to enhance waste reduction initiatives. We recommend that the Province revise its waste regulations to enhance waste reduction and that the Province consult with all sectors as it develops and revises these regulations".

The Region of Peel submitted the *Co-ordinated Municipal Response Based on Discussions with the WDO HSW Task Group members and AMRC HHW Committee members.* This document states "generally, there is strong municipal support for recognition of the need for legislation to drive organics diversion system improvements". The Town of Markham echoes this statement.

CPCA and CMCS both support "the need for review of 3Rs regulations as soon as possible where they currently hinder creative uses for post-consumer products. This is particularly relevant where post-consumer products could very rapidly be diverted for use if slight modifications were made to regulations, for example in regard to regulations governing blended fuels and the transportation and handling of waste/resource materials".

"The Association for Nutritional Awareness expresses its concerns at the fact that ons 103-94 deals with the industrial, commercial and institutional sector (which includes a specific section for multi-unit residential buildings) and that the owner of the building is responsible for a source separation (recycling) program, many owners are not providing recycling services as required' (quoted from email dated July 4, 2000 from Ms. Chantal Mathieu, Environmental Control Officer, Region of Sudbury). We wish to emphasize the need to legislate this matter as soon as possible so that the seriousness of the situation will be understood before it is too late. If it is already legislated we believe that the body to enforce the laws should be activated."

4.9.3 Is the Government of Ontario Prepared to Implement Regulations to Enable the WDO to Raise the Funding to Support Municipal Waste Diversion Initiatives and to Reach the Diversion Target Established?

The Citizens' Network on Waste Management "strongly agree(s) with those on the WDO who call upon the Province to develop regulations that require all responsible industries to contribute to the costs. We recommend that the Province develop a regulation that requires industry to contribute to the costs of waste programmes and that the Province consult with all sectors as it develops and revises" this regulation.

"The Region of Peel agrees with the recommendation that an enforcement mechanism that may include regulation is required to minimize 'free riders' and provide a 'level playing field' among competing industries." The Region of Peel also submitted *the Co-ordinated Municipal Response Based on Discussions with the WDO HSW Task Group members and AMRC HHW Committee members.* This document states "generally, there is strong municipal support for recognition of the need for backdrop regulations to ensure that sufficient funds are raised and to promote a level playing field among competing companies". The Town of Markham echoes this statement.

P&G and CMCS both comment that a level playing field "is important especially given that the non grocery retail sector (RCC: Retail Council of Canada) has dropped out of the process. It is critical that the sectors represented by the RCC be included under the scope of any regulations to truly level the playing field". CMCS also "thoroughly endorses the stated need for backdrop regulation to ensure a level playing field. Such regulation should draw in all Ontario municipalities and brand-owners selling HSW products in Ontario to participate in the stewardship programs. We would stress that flexibility is the key issue here. The regulation should not be too prescriptive. It should simply set objectives and responsibilities but allow the parties concerned to agree on methods, including funding models and methods of collection of such funds".

OCNA "believe(s) a voluntary, non-regulatory approach is the way to secure the level of commitment and vigorous participation that will be required to attain 50% waste diversion. Fostering a spirit of cooperation and partnership by working through industry associations can only engender this type of commitment".

CMCS expresses concern "that the Canadian Newspaper Association favours a non-regulatory approach for printed matter. (See pages 30 and 53.) If the printed matter sector is not covered by the regulation, then it becomes more difficult to ensure fairness between this sector and the consumer packaging sector. As a minimum, whatever solution is chosen, it is critical that it be clear that the consumer packaging sector will not be responsible for any shortfall that might result from an unregulated printed matter process". P&G echoes this comment.

4.9.4 Recommendations for Additional Issues

A number of respondents suggested additional issues that the WDO should consider.

CCC suggests that the "WDO ensure that our efforts to divert organics are equally matched with efforts to ensure meaningful, effective and relevant products are produced for the marketplace. Without significant attention to establishing and supporting the fundamentals of product development (including quality, consistency, product claims &

assurances), the potential for the composting industry to retain & build the confidence of our end users in our products and the market will be severely in jeopardy".

CCC also suggests that "the government of Ontario has the potential to support development of markets and product confidence through assisting our industry in building understanding and connections with various end markets. It is our hope that both the WDO and the Ministry of the Environment will work with The Composting Council of Canada to establish and build linkages with other provincial ministries such as Agriculture, Industry and the Management Board Secretariat. These ministries hold the potential for expanding market demand and confidence in composting and compost usage".

The County of Peterborough points out that "the key issues section (page 19) fails to identify the really key issues and they are a standard cost accounting model and an effective way to measure program efficiencies. These surely are fundamental pieces of information that a funding formula will be built upon". The County adds "there are many key issues yet to be resolved that are not mentioned, most notable what is the agreed upon funding process".

The Town of Markham indicates "there are issues which should be addressed in more detail by the WDO with respect to the measurement of cost effectiveness and performance, future program cost assumptions, the role of User Pay, and the long-term sustainability of composting programs".

CMCS suggests that a more thorough benefits analysis is required. "Given this need for rethinking (of objectives and goals), we find the report too neutral on the equally important issue of benefits. Viewed from a business perspective, the objectives remain arbitrary unless balanced by a clear understanding of the benefits to be anticipated by the taxpayers and consumers of the province who will pay for these activities. For example, on the basis of the data estimated in the report, projected costs for the total diversion efforts will exceed $150 million in the year 2005. As presented, the WDO support of these programs appears largely as an exercise in transferring responsibility for costs from municipalities to consumers; costs that are not in any way justified by an equally careful analysis of resulting benefits. The lack of a benefits analysis is the weakest aspect of this report. We trust this will be rectified in the final report to the Minister to enable the Province to make educated decisions on the future sustainability of these programs."

CMCS asks that the WDO give "a clear commitment of support ... to the National Definition of HHW being developed by the Canadian Standards Association" in the final
elationship between definition of HSW and the efficiency of its management".

CMCS is also "concerned that the report makes no mention of how the management of used-oil is to be incorporated into HSW programs. Used oil is a substantial component of the materials that are likely to require management and is not represented at the WDO table or in the MOU".

The Region of Durham identifies additional issues related to multi-unit recycling. "Considerable opportunity exists in the Multi Family sector for recycling and composting. As you are aware, the type of service necessary for a Multi Family program is considerably different from the residential curbside service and thus it would be reasonable that a separate formula be crafted. Some municipalities have a higher percentage of Multi Family buildings than others. For example, Toronto has a greater number of these buildings than most other municipalities. Other municipalities do not provide any waste services to any multi family buildings. These issues need to be addressed. It appears there is no WDO Task Committee examining this unique residential system for recycling and composting improvements."

EPIC suggests that "for solid waste management systems to be sustainable, it is important in decision making to consider both the economic cost and the environmental benefits that the expenditures may bring. We strongly recommend that the WDO consider further work to relate waste management and its effect on the environment to other goals of the Province such as the reduction of smog forming chemicals such as NOx, VOC and particulate matter (PM10) which are all produced through the activities involved in waste management. Another major issue to be faced by the Province in the next few years is the need to reduce the emissions of greenhouse gases. Waste management must be related in a holistic manner to the other environmental objectives of the Province. By doing this, maximum environmental benefit for the expenditures available is likely to be achieved. This approach may however lead to directions in waste management options that are very novel but singularly effective in meeting environmental goals".

P&G suggests dialogue with the Province of Quebec be undertaken. "While outside the scope of the WDO process and the Interim Report, all stakeholders involved, including the province, should undertake to dialogue with their counterparts in Quebec to accomplish two things: 1) a low cost funding mechanism in both provinces that contains drivers in support of on-going cost efficiency and continual improvement, and 2) harmonization between the provinces as far as possible."

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Appendix 5B

WDO RESPONSE TO SUMMARY OF SUGGESTIONS & COMMENTS CONCERNING THE WDO INTERIM REPORT, 30 June 2000

At the request of the WDO Board of Directors, the WDO undertook to outline here how it addressed the major suggestions and comments offered by people and organizations on the WDO Interim Report submitted to the Minister of the Environment on June 30, 2000. The WDO received 19 written submissions, which were summarized by the Recycling Council of Ontario in a report for the WDO. The report, Summary of Suggestions & Comments Concerning the WDO Interim Report, 30 June 2000, precedes this document in this appendices.

Summary Report Heading 4.1 – Concerning the WDO Process

Timeline & Mandate

Both the timeline and the mandate for the WDO were set by the Ministry of the Environment within the Memorandum of Understanding which formed the basis for the initial year of the WDO. The challenge for the WDO has been to comply with this requirement.

Both of these issues are addressed in Section 7 of the September 1 Report to the Minister.

Summary Report Heading 4.2 - WDO Guiding Principles

The WDO Board of Directors has prepared and approved a revised Guiding Principles document. The original document addressed only municipal recycling programs. The revised document incorporates consideration of recycling, organic diversion and HSW management.

While the first year mandate of the WDO is clearly focused on very specific waste diversion tasks, the programs and policy recommendations that have been made are also supportive of reduction and reuse.

The revised "combined principles" document clearly recognizes the unique and specific needs of each waste stream.

Summary Report Heading 4.3 - WDO Diversion Goal

On August 1, 2000, the Minister of the Environment sent a letter to the WDO containing his responses to the WDO Interim Report. The letter clearly sets out that "the province remains committed to achieving 50% reduction in waste disposal per capita relative to 1987."

The issue of what constitutes an appropriate waste diversion goal for the WDO and the projected costs of a range of alternative waste reduction goals are addressed in some depth in the September 1 Report, including sections:

- 4.1 – addressing the technical issues associated with the provincial methodology based upon an historic waste flow approach and the proposed WDO current waste flow approach
- 4.2 – detailing the significant policy and behavioral changes likely to be required to achieve a 50% diversion target
- 4.3 – setting out three alternative waste diversion scenarios (current momentum, 50% diversion and a middle ground) and the recycling and organic waste diversion that would need to be achieved to reach these goals
- 5.1, 5.2, 5.5 – the costs of achieving the diversion goals established for each
- 5.6 – the WDO has recommended a waste diversion specific to the residential waste stream, which includes an analysis of the significant cost premium the WDO expects to be incurred to reach beyond this goal for organics

It is important to clearly distinguish between the waste diversion goals of the province (which address both residential and IC&I wastes) and the diversion goals set for agreed upon WDO programs that will address (under existing agreements) only some elements of the residential waste stream.

The important issue of the overall environmental effect of achieving any diversion goal is dealt with in several sections of the report including:

- 3.2.2 recommendations related to organics diversion
- 3.2.3 recommendations related to HSW management
- 7.0 future WDO roles and responsibilities

Summary Report Heading 4.4 - Measuring Performance

Measuring performance

The need for standardized performance measures has been addressed in 1.1.2 (proposed WDO financial support to municipalities).

The need to apply appropriate performance measures to different materials streams is encompassed within the preferred options identified for recycling (6.1.3) and HSW (6.3.3).

Measuring efficiency

It is agreed that acceptable definitions of efficiency and how these may impact municipal program financial or operational efficiency are important and work should continue in this area if the WDO continues beyond this initial year.

Measuring Cost-Effectiveness

The WDO has agreed to adopt a process of annual review of municipal costs.

Agreement in principle has also been reached on utilizing a municipal funding allocation model, which recognizes key differences in municipal operations (1.1.2).

Summary Report Heading 4.5 Data and Assumptions

Diversion and Cost Scenarios

Addressed in Part IV of September 1 Report.

Validity of Data and Assumptions

Every effort was been made through the WDO committee work to access and utilize the best available data from all key stakeholders in the province. The 1999 cost survey which forms the basis for the financial projections, for example, was conducted with the assistance of the CAO Municipal Benchmarking Initiative, Municipal Waste Integration Network (MWIN), Association of Municipal Recycling Coordinators (AMRC), Composting Council of Canada (CCC) and Recycling Council of Ontario (RCO). We are confident that this data represents the most thorough and comprehensive baseline yet established for Ontario's waste diversion efforts.

Furthermore, projects approved in the WDO Round One funding gave significant priority to further improving this data base. The results from these efforts will be used to further refine existing planning assumptions.

Cost data and Cost Projections

See comments above.

The WDO Board of Directors recognizes that the cost projections in this report can only be *projections*. There are any number of factors which can be expected to influence the costs that will actually be incurred by municipal diversion programs and the revenues that will be received from the sale of recovered materials in the future. Recognizing this, the participants in the WDO process adopted the pragmatic view that "the numbers will be what the numbers will be." That is, the WDO calculations that will be made in future years will be based upon the best available data that can be agreed on by the participants in this process.

The WDO has also indicated that resources will be applied to reducing costs now incurred and to overcoming barriers to marketing recovered materials in the interests of reducing costs to all.

The recommendations regarding including environmental performance analysis and promoting administrative simplicity are acknowledged and captured (at least in part) in the recommendations made in Sections VI and VII of the report.

Summary Report Heading 4.7 - Key Tasks to be Completed

Future governance of the WDO is a key issue that will be addressed by the WDO Board at its October 11 meeting. This issue is addressed in Section 3.3 of the September 1 Report.

Summary Report Heading 4.8 - Key Findings to Date

Getting to 50% diversion

The critical role of organics diversion to achieving this goal is addressed in 3.2.2, 4.2, and 5.5.

The comment regarding the relative levels of effort to achieve current diversion rates and those that will be required in the future that appeared in the Interim Report has been removed from the September 1 Report.

The WDO acknowledges the need for and contribution that can be made by new technologies in achieving future waste diversion goals.

Paying for Diversion Programs

The brief comments contained in the Interim Report do not reflect the breadth and depth of discussion that has occurred throughout the WDO process around the concept of producer responsibility. It was not, however, the intent of the WDO to produce a more extensive treatise on this subject given that:

(a) extensive literature already exists on this subject (i.e. OECD draft report)
(b) the Ministry of the Environment (through the MOU) had already defined a shared industry/municipal responsibility model as the way it wished the province to go forward
(c) the job of the WDO was to implement the programs specified in the MOU and not to continue to review alternative stewardship models that have been debated in Ontario for over a decade

In regards to research and development (R&D) funding, the WDO Board of Directors decided that 10% of industry's 50% share of funding would be reserved to promote improved program efficiencies and costs effectiveness and/or to provide additional municipal incentives (1.1.2, 6.1.3). A portion of these funds is likely to be applied to R&D.

The role of user pay

The position of the Retail Council of Canada regarding user pay programs (and the support of other industry and municipal representatives for this approach) is noted in 6.1.2 and Section 7.

There will be a need for regulation

The comments made on this issue presented a useful microcosm of the range of views expressed by many of the participants in the WDO process. After reviewing the recommendations made by the WDO committees and tasks groups of the WDO, the Board of Directors has recommended that enforcement mechanisms will need to be implemented for both industry and municipalities if the financial and waste diversion goals of the WDO are to be met (see Section 6).

Sharing the costs

The options considered by the WDO and the final recommendations of the board in regards to this critical issue are addressed in some depth in Section 6 of the September 1 Report. Many of the issues raised here are addressed in the report and/or in this note.

Organics programs

The issues raised have been reviewed at some length by the Organics Task Group and the Funding and Regulations Committee and are addressed in 3.2.2, 5.2, 5.5 and in the Interim Five-Year Plan appended to the report. The recommendations of the board are presented in 6.2.

HSW programs

The HSW Task Group achieved consensus on a shared cost approach to funding HSW programs and this is reflected in 3.2.3, 5.3 and 6.3.

Waste programs

In key funding discussions, municipal representatives raised the issue of how to take into consideration ongoing waste disposal costs. Industry representatives argued for the need to deduct avoided waste disposal costs in calculating any possible industry share of costs.

The recommendation of the board is that net recycling costs be shared between industry and municipalities without consideration of avoided costs, for a period of five years (6.1.3).

Summary Report Heading 4.9 - Issues that Have Yet to be Resolved

Should there be a sunset date for the activities of the WDO?

The final recommendation of the board is that the proposed WDO funding program and the need for continuation of the WDO itself be reviewed after a period of five years (Sections 6 and 7).

Should existing provincial 3Rs regulations be re-evaluated?

This would be necessary if the recommendations made by the WDO in regards to organics are accepted.

Implementation of regulations

A core element of the September 1 Report is the need for regulations in regards to packaging and municipal obligations.

The preference of the CNA and OCNA for non-regulatory approaches is noted (6.1).

Recommendations for additional issues

The need for market development efforts concerning organics is noted in 3.2.2, 4.2, and 6.2.

The need for a standardized accounting model and an effective way to measure program efficiencies is addressed in 3.2.1, and 6.1.

The implications of striving for a 50% diversion goal are stressed in 4.2 and 5.5.

Support for the CSA work on definitions for HHW is acknowledged in 3.2.3 and 6.3.3.

The need for continuing work on multi-family recycling is acknowledged in 3.2.1, in the Interim Five-Year Plan for recycling and elsewhere in the report.

The need to include consideration of both the economic cost and the environmental benefits has been included in 3.2.2, 3.2.3, 6.2.3, and 7.

The WDO has maintained contact with Collect Selective Quebec (CSQ) to promote increased dialogue on the approaches being taken to funding waste diversion programs being considered within each province.